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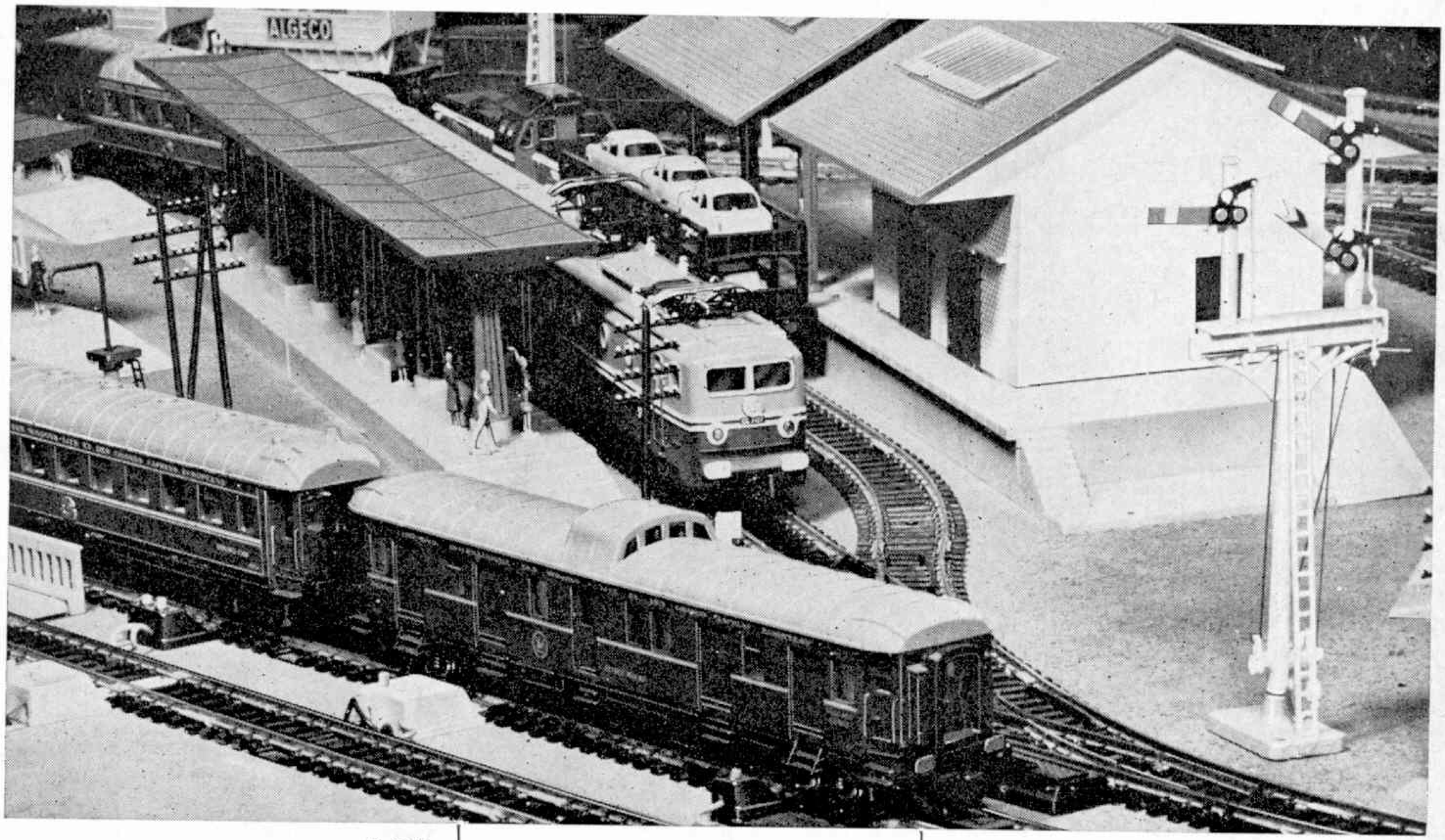

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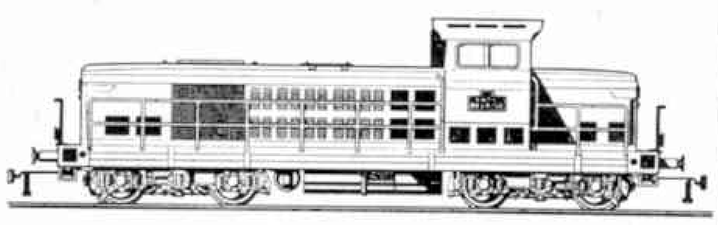

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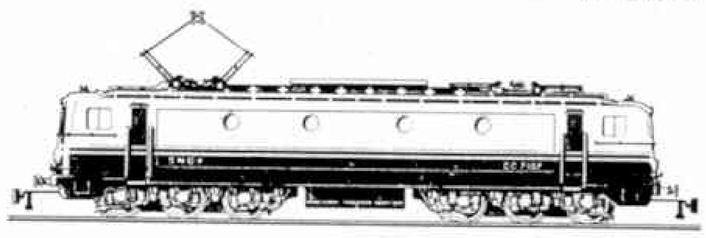

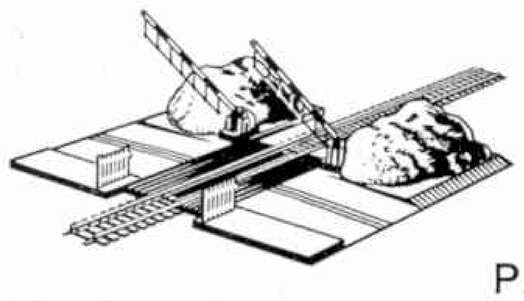

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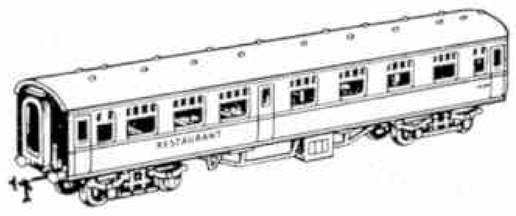

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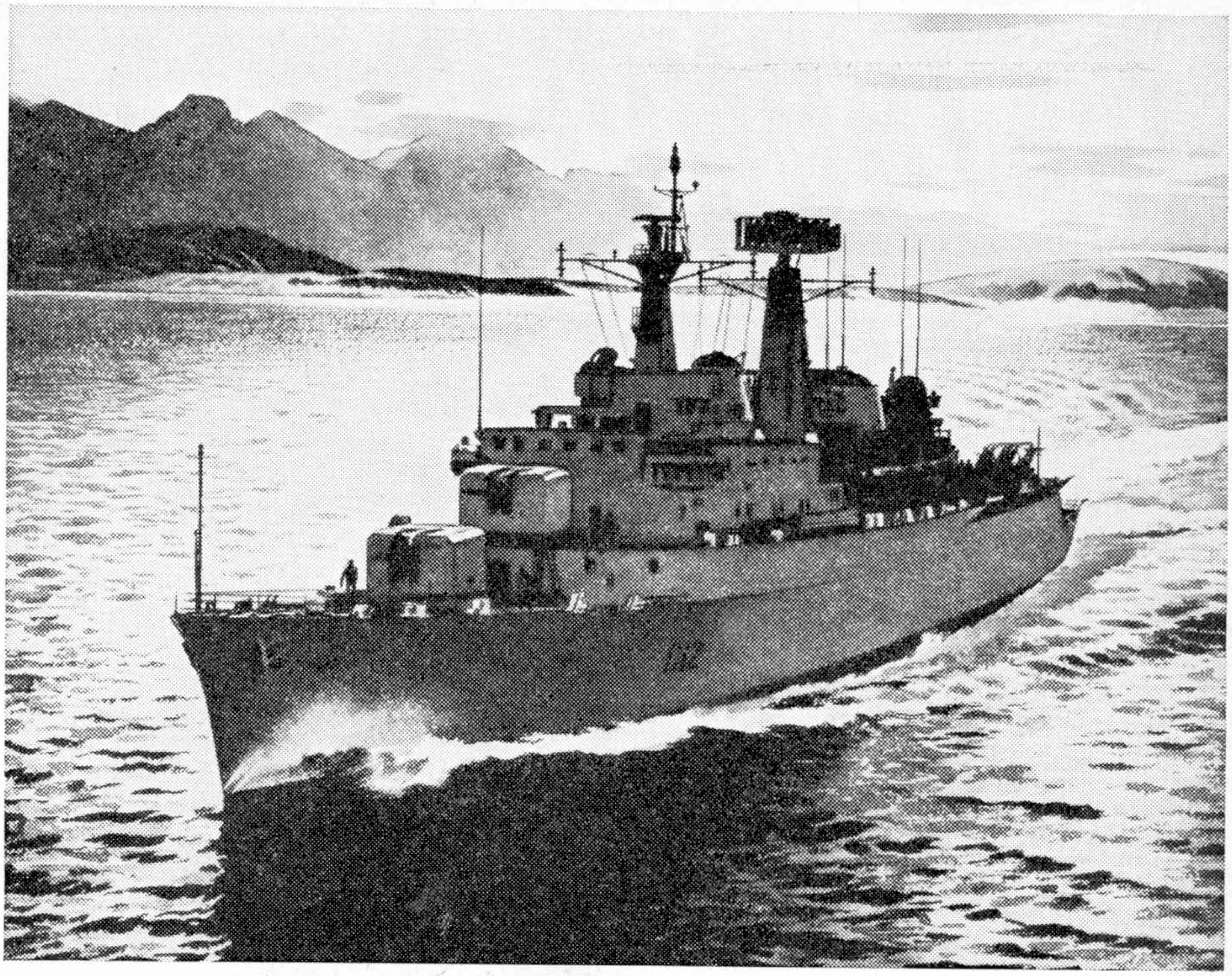

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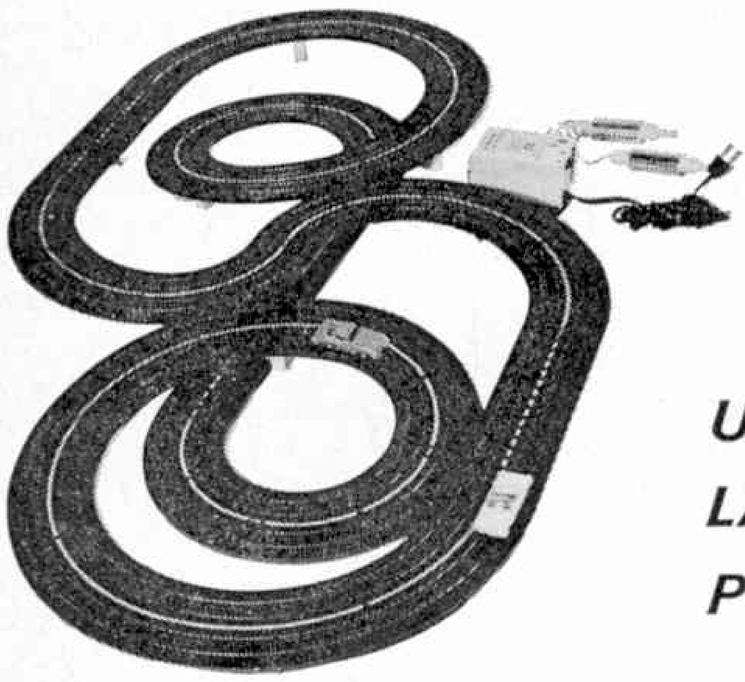

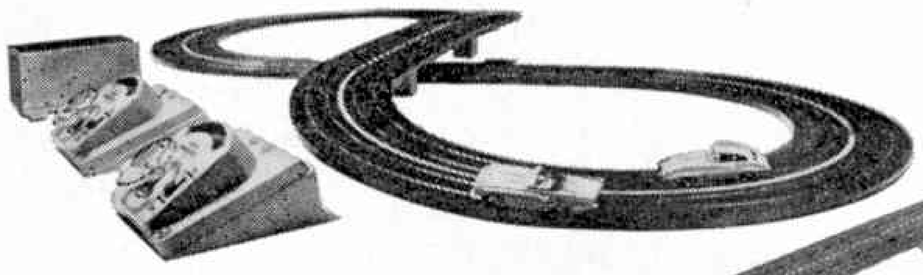

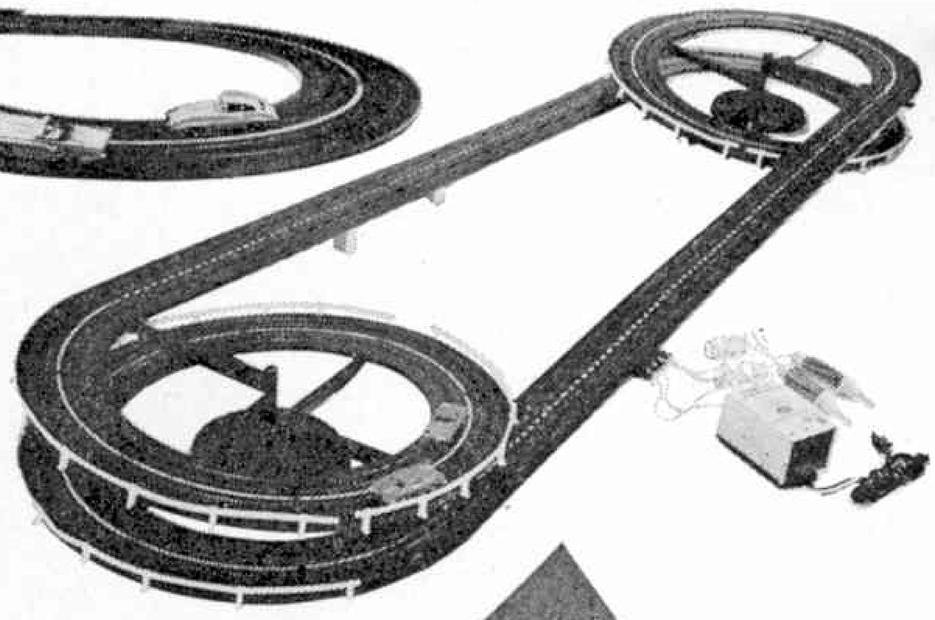

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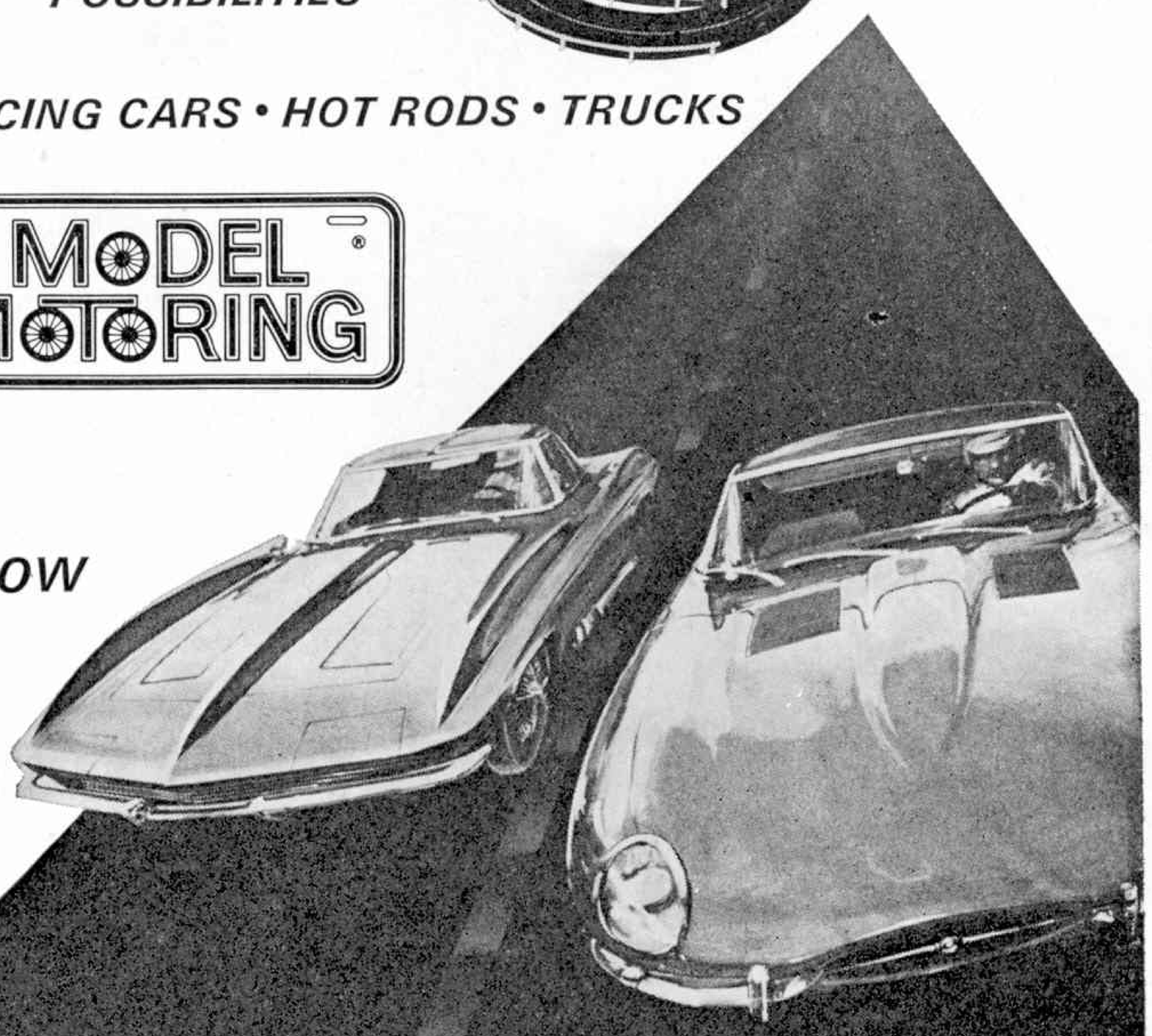

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THE MODEL WORLD AT YOUR FINGERTIPS

MECCANO MAGAZINE

THE MODEL WORLD AT YOUR FINGERTIPS

NOVEMBER 1966 VOLUME 51 No. 11

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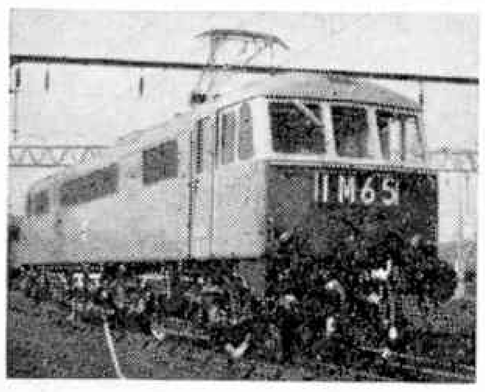

ON THE COVER: Looking very smart in its blue livery, the type AL6 latest of British Rail's pantograph locomotives is now in regular service on the newly electrified Liverpool, Manchester and Euston route. These locomotives haul new Pullman trains, and run regularly at speeds in excess of 100 m.p.h.

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On thumbing through the pages of this month's Meccano Magazine, you will notice a rather 'historical' bias to the articles. On pages 6 and 7 'Railway Relics' tells the story of the York Railway Museum, and some of the fascinating and colourful items it contains. York is one of the very oldest museums of its kind in this country, and although it has been rather overshadowed recently by the Transport Museum at Clapham, it nevertheless contains some of the most interesting and exciting railway exhibits to be seen anywhere. The exhibits, far from being kept out of reach, as is the case in many museums, are completely accessible and open to close inspection. In fact, one can actually climb onto the footplates of the locomotives and, for a few brief moments and with a little imagination, become a top-link express driver of years ago!

Yes, museums are wonderful places, and visiting them is an interesting way to pass a wet afternoon. But remember that museums, particularly the ones devoted to transport subjects, can only remain open if business is good, so do go! Take a friend, or better still, make it a party.

Still in an historical vein, 'Aviation Pioneers' starting on page 8 contains three articles about some wonderful early aircraft. Nobody really knows who invented the aeroplane, but John Stringfellow, as you will read on pages 8 and 9, has as good a claim as anyone to the honour!

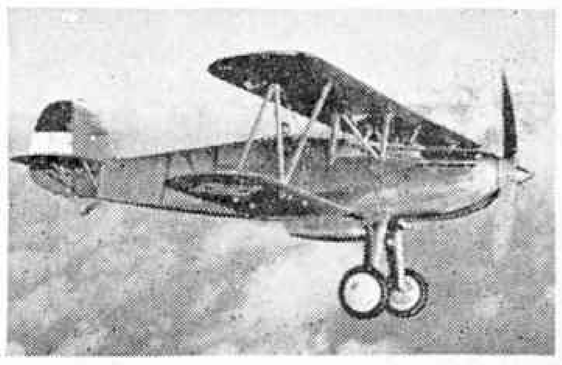
The exploits of Monsieur Bleriot's little monoplane across the English Channel and the Vickers Vimy flown by Alcock and Brown across the Atlantic are well known, but these famous 'planes were not 'one off' jobs but built in quantity for military purposes, and 'Pioneers in Battledress' on page 10 tells the story of the military versions of these aeroplanes.

Judging from comments heard in aeromodelling circles and letters that arrive at our editorial offices, the M.M. recipe for aircraft articles has met with universal approval. The recipe, of course, is 'Take one article by John W. R. Taylor, add a page or two on plastic kit conversion, and garnish with a scale plan by Ian Stair'. Delicious! New readers, however, may not be aware that we have been cooking this sort of delicacy for some time now, and that the following back-numbers are available from this office, prices 2s. 6d. post free.

May 1966 The Westland Wapiti.
June 1966 The Fokker F.VIIa.
July 1966 Junkers Ju 88/Focke-Wulf 190 'Mistel' composite aircraft.
August 1966 Hawker Hart.
September 1966 Albatros D.111.
October 1966 Gloster Whittle E28/39.

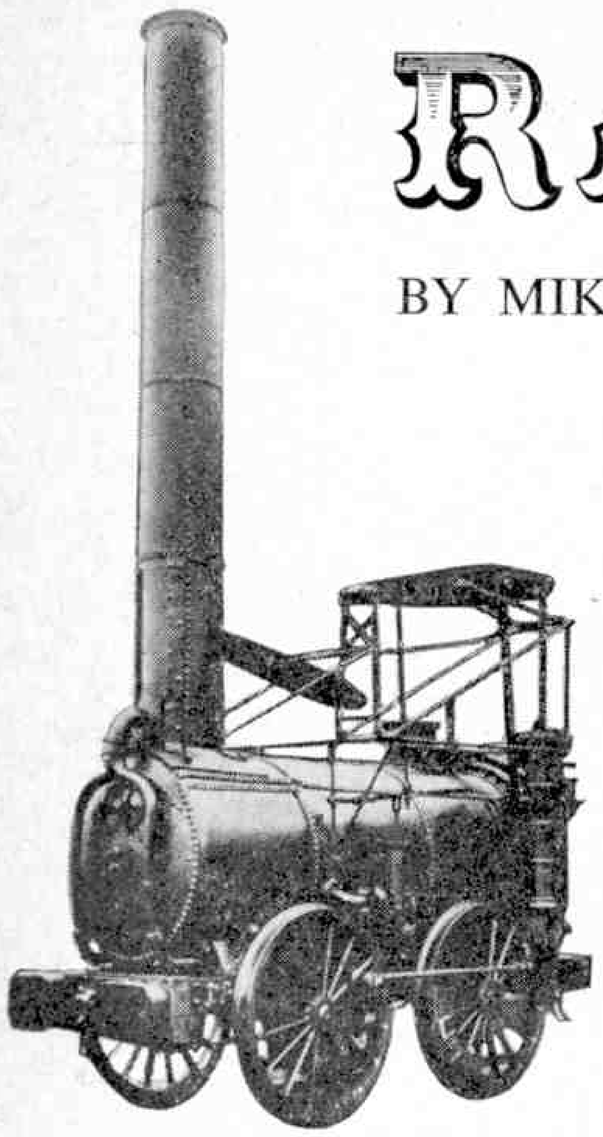
If you happen to be watching television between 5 and 6 p.m. any afternoon from November 23rd to December 2nd, you will see a commercial featuring an exciting new Dinky Toy, the Aston Martin DB6, successor to the world-famous DB5. You will also hear that hundreds of Dinky DB6's are to be given away free to Meccano Magazine readers. Want to add a brand new Dinky Aston to your collection? Don't miss next month's issue to find out how to get yours!

Next Month: The story of the Hawker Fury by J. W. R. Taylor, backed up by another fine scale plan by Ian Stair.



RAILWAY RELICS

BY MIKE RICKETT



Three years after the memorable centenary celebrations of the Stockton and Darlington railway in 1925, a unique and fascinating museum was opened in a city that was already famous for its impressive walls, narrow streets and its Minster. This city was York, formerly the headquarters of the North Eastern Railway Company and now the headquarters of the North Eastern Region of British Rail. Since its original opening in 1928, the York Railway Museum has grown quite considerably and is now thought to be one of the finest purely railway museums in Britain, if not the world.

DIVIDED into two sections, both easily accessible from York Railway Station, the small exhibits part is, appropriately, situated just inside the city walls by the Railway Offices in what used to be the old Station House of 1841-77. The rooms concerned were once first class refreshment rooms of the station and because it was a terminus, a halt was enforced on any journey further north. It is said that Charles Dickens once stopped to refresh himself in this very room after close confinement in a first class four wheel coach. As one enters this section—admittance is quite free incidentally—a most effective diorama depicting the opening of the Stockton and Darlington Railway meets the eye. Over three hundred costumed figures are included in this small scale model, which shows George Stephenson driving 'Locomotion' on the journey from Sheldon to Stockton crossing the Skerne Bridge at Darlington.

A collection of engravings and pictures inside the museum illustrate in fascinating detail the early pioneering days of railways. Others show the journey from Liverpool to York at about the middle of the last century, the construction of the London and Birmingham Railway and famous bridges, engineers and company crests. One rather amusing exhibit, a notice, relates to Walker's patented electric train signal. It reads 'The Railway Company are good enough for a consideration to supply the signals, but they are not liable for any inconvenience that may arise from any irregularity in the signals no matter what may be the cause for such irregularity'. There is also another plate with an inscription reading 'Take notice: this engine is the property of Alexander Tracy of Cambridge', probably a disgruntled shareholder whose plate is a reminder of the dire financial straits into which many of the old railway companies fell.

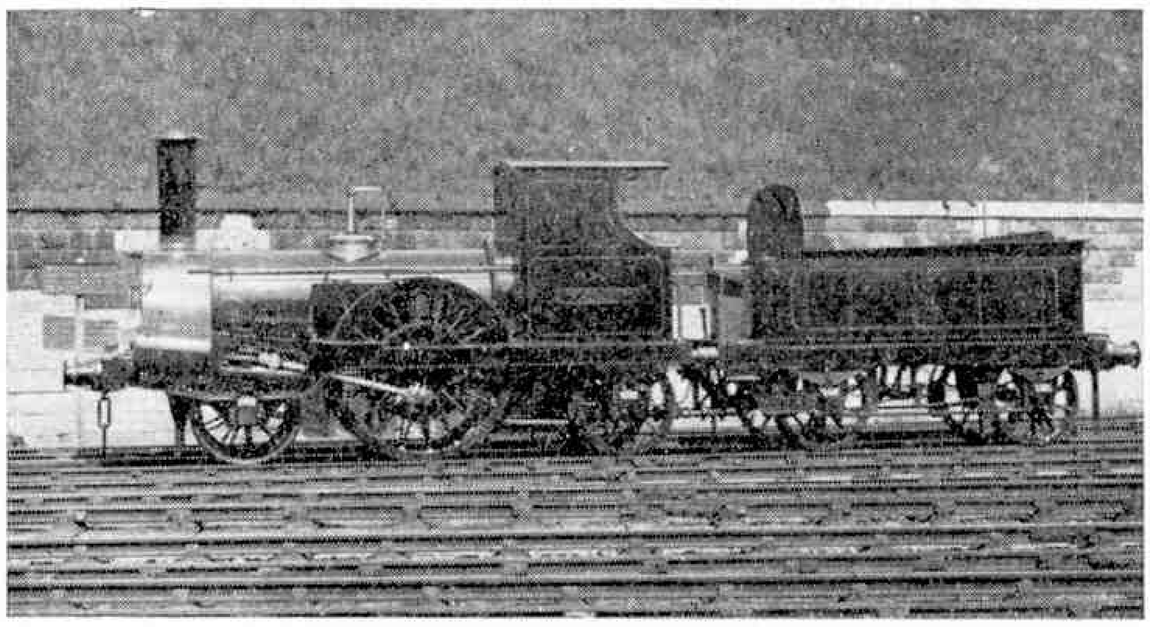
TRAGEDY, too, is represented in the museum. There is a walking stick made by a labourer at Tayport from the tragic debris of the first Tay Bridge which collapsed in 1879, carrying a train load of passengers to their deaths.

Besides these and many other small relics such as station bells, lamps, staffs, and an Edmonton ticket machine, there are early maps and plans, photographs, drawings, a fine collection of railway buttons and tickets (two dated 1849), and also many fine models both large and small.

Of perhaps greater interest is the large exhibits section, housed in the former York and North Midland Railway Locomotives Workshop in Queens Street. In here are many items of interest. Take the collection of rail, for example, showing the progress of permanent way from very early times, and the development of rail from the first 'plateway', to cast and malleable iron rails of different types. Also included is a specimen of the Blenkinsop rack rail with spur wheel. One exhibit goes back even further than this, to 4 in. by 4 in. oak beams on which children and men pushed crude wooden wagons. Stone blocks, often used for sleepers on much of this early track, can also be seen and were, incidentally, carved out by men paid 5d. per stone, in 1822!

EVEN bridges are included. One shows a section of the first iron railway bridge ever built. Taken from the River Gaunless on the section of line between the Everely and the Brusselton inclines, this is made from cast iron and consists of four spans. On inclines, such as this, horses were used to pull loads up and were then taken down in Dandy wagons, of which there is also an example, together with cauldron wagons, in the museum. A model of a pier from the great Belah viaduct built in 1860 and only recently demolished is included, and part of the laminated wood bridges from North Shields, built in 1839, and a girder from the Milby Cut Bridge of 1769, are also featured in this important historical collection.

The display of railway signals and lever locking frames shows how the hand signal of earlier years was gradually developed into the elaborate system in use today. Worthy of particular attention are the lever frames built by the famous firm of Saxby and Farmer.



Top left: the 'Agenoria'. Note the tall chimney and the 'Grasshopper' appearance of the motion above the boiler. Above: the first locomotive to be built at Crewe Works 'Columbine' was used as 'Engineer Bangor' until 1902

MANY early railways used cable haulage by huge stationary winding engines. One such engine, built in 1833 to work mineral traffic on the Weatherall incline and which was in use for 84 years, is shown in the entrance gallery of the museum. Notice the huge fly wheel and the gigantic piston. One of the three other beam engines displayed was built in 1810, later used to drive machinery at Kings Cross engine shed, and was in use until 1930!

For sheer size, the twelve locomotives in this section naturally command the most attention, since they dominate the available space. Of the two situated in the entrance gallery, the Hetton Colliery locomotive is undoubtedly of great interest. The locomotive was one of George Stephenson's first major tasks and together with Nicholas Wood, he built in 1822 three locomotives for the then new railway at the Hetton Colliery. A point of interest is that the driver rode on a platform positioned halfway along the boiler. The engine at York was taken out of service in 1912 and was used, in steam, for the railway centenary of 1925.

Also in the entrance gallery is 'Agenoria', from the Shutt End Colliery. Built in 1829, 'Agenoria' was one of a batch of four locomotives, three of which were exported to the United States. The locomotive in the museum is important because it was used for experiments by Timothy Hackworth to increase the heating surface, helping to save the doubtful fate of steam locomotives in the 1820's. Like the Hetton Colliery locomotive, 'Agenoria' has beams mounted over the engine, parallel instead of across, giving the so-called 'Grass-Hopper Motion'.

ONE of the engines in the main hall of exceptional interest is 'Columbine', the first locomotive to be built at Crewe Works. She was completed in February, 1845, and was actually number 49 of the Grand Junction Railway, the predecessor to the London and North Western Railway. 'Columbine' is an outstanding example of the Allan type locomotive, and as was usual then, had no cab. It was the custom, in the L.N.W.R. at that time, for old locomotives to be placed at the service of departmental engineers, and in this capacity 'Columbine' acted from 1877, being re-named 'Engineer

Bangor'. She ran in service for an additional 25 years and was finally withdrawn and preserved in 1902.

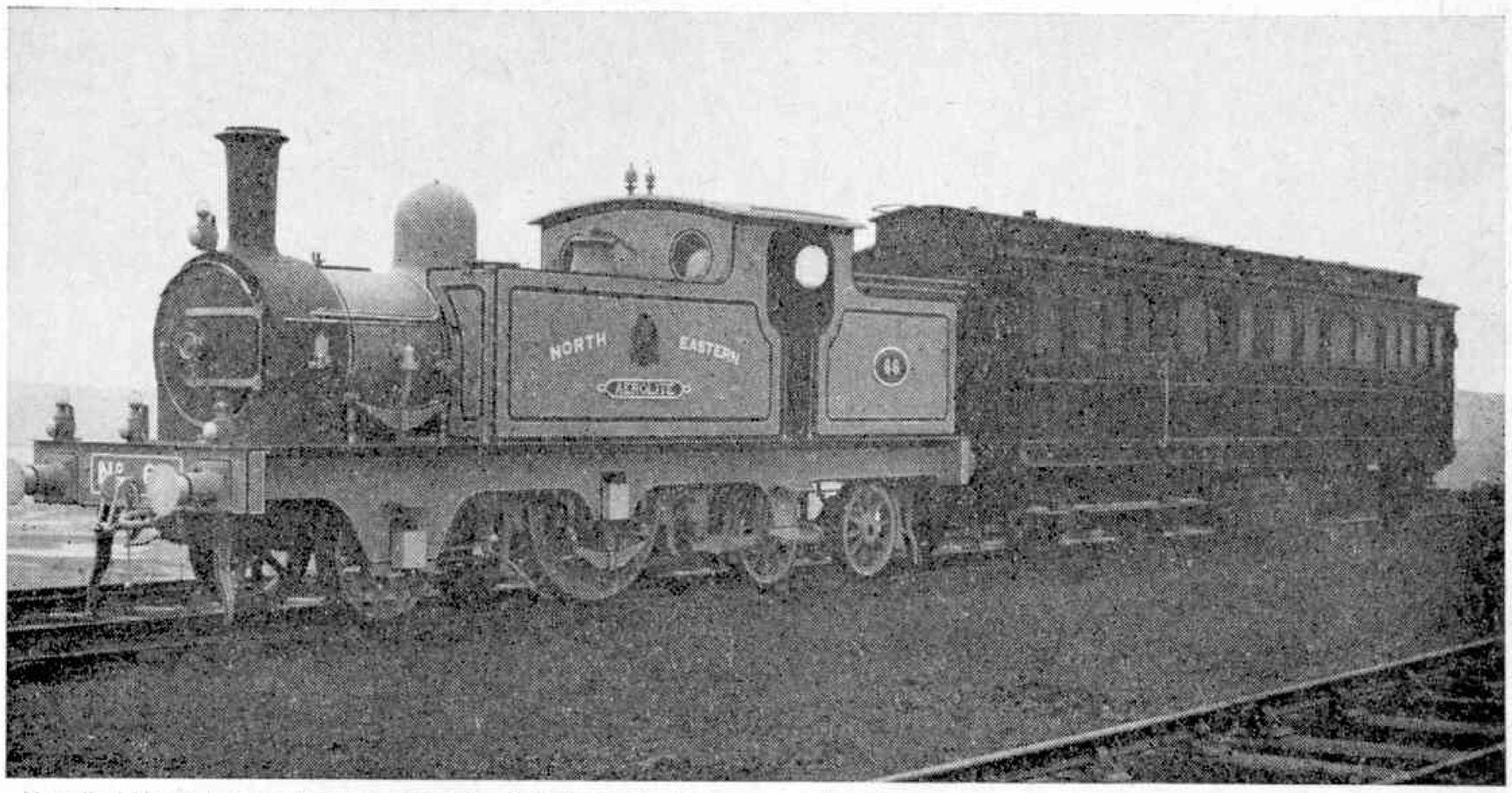
The neat and compact 'Aerolite' is a 50 year old descendant of a series of locomotives all bearing the same name and originating from a 2-2-2 tank exhibited at the great exhibition of 1851. Rebuilt in 1869, 1886, and again in 1892 when it underwent a complete transformation into a 4-2-2, the engine was fitted with the Worsdell-Von Borries system of compounding, the only locomotive fitted with this system to survive. Rebuilt in 1902 to the 2-2-4 wheel arrangement, the name was added in 1907, when she was again handed back to the running department before being actually withdrawn in 1933.

1870 was a year that saw a great boom in railway traffic and the Great Northern Railway, wishing to provide speedier trains, introduced their famous eight foot 'Bogie Single' No. 1. These locomotives were usually stationed at Doncaster and worked between Grantham and Leeds. This particular engine was withdrawn from service in 1907, having run an astounding total of 1,404,663 miles.

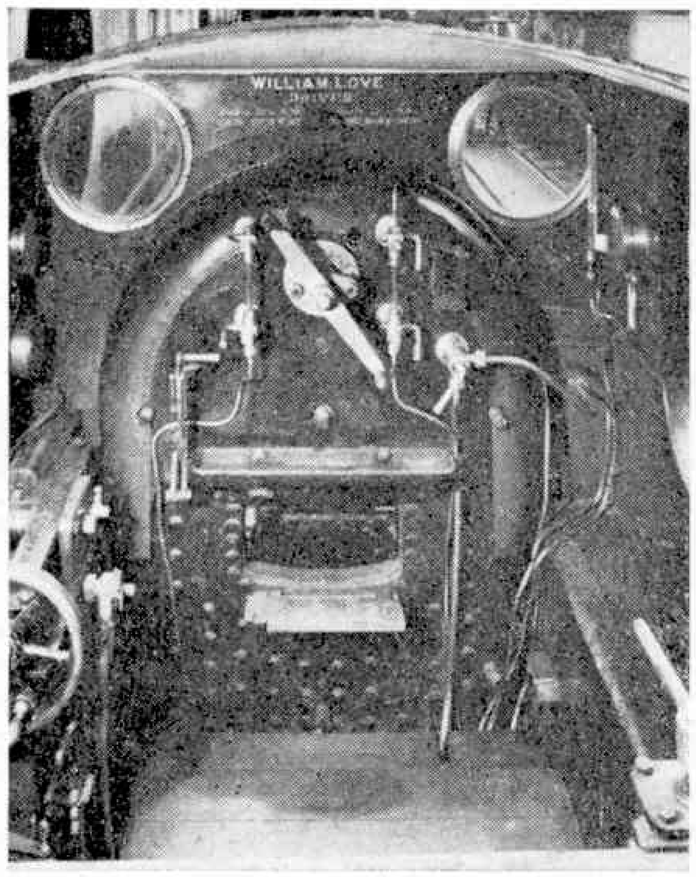
NEARLY every railway enthusiast has heard of the famous engine 'Gladstone', typical of the unique style of William Stroudley, Locomotive Superintendent of the London Brighton and South Coast Railway from 1870 to 1889. Stroudley was unusual in that, quite against accepted tradition, he built his most powerful passenger engine to the 0-4-2 wheel arrangement instead of 2-4-0, which was then the more popular. There is no doubt that the 'Gladstone' engines ran very steadily on the Brighton line but few designers ever imitated this example. Each engine had its own driver whose name was printed in the cab. The style of painting, in yellow ochre, was officially known as 'Improved Engine Green' and it characterised the Brighton line for many years.

THE most modern locomotive in the museum is No. 251, a Great Northern Railway express passenger locomotive built in 1902 to the Atlantic wheel arrangement. This highly distinctive class of locomotive captured the imagination of the travelling public and become symbolic of the Great Northern Railway, as the Stirling single had in Victorian times. Engines of this type remained in main line service for nearly forty years and the design was modernised, particularly by Sir Nigel Gresley.

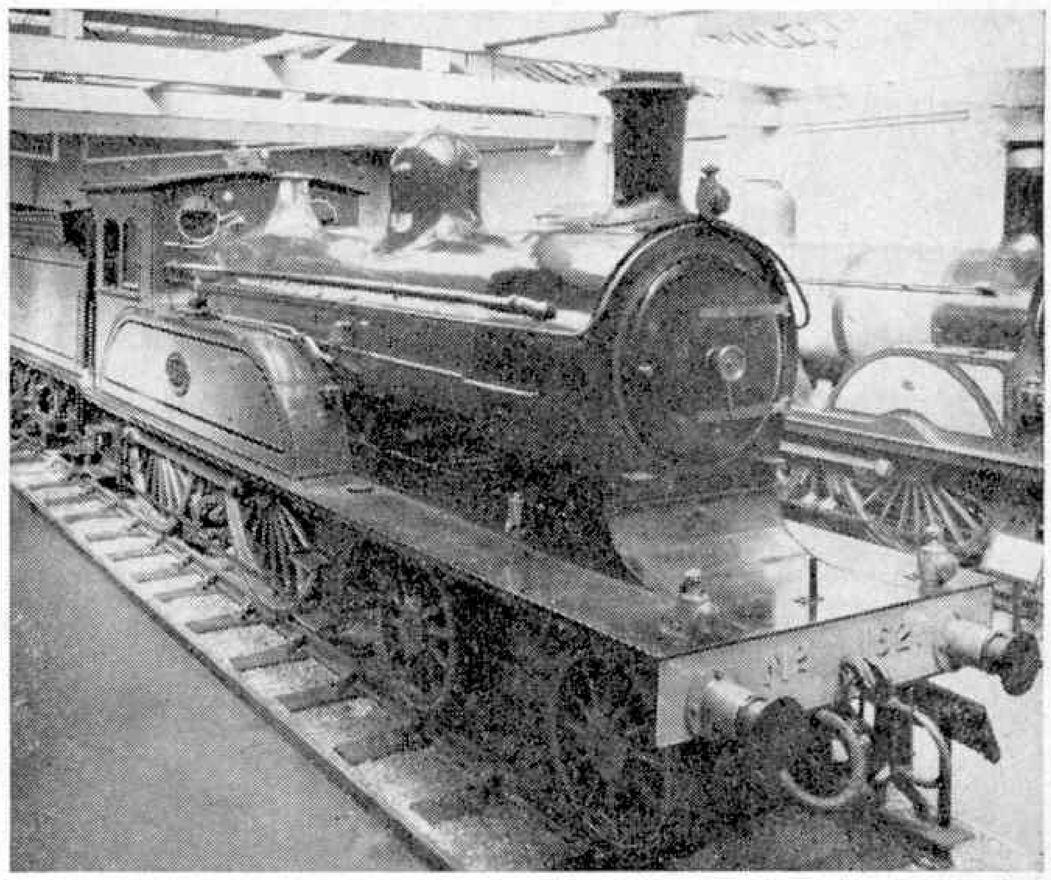
Literally scores of other items, ranging from name plates to coaches, can also be seen in this section of the museum and space prevents me from mentioning them here. The recently announced proposal, however, to cut financial losses incurred by the B.T.C. museums seems likely to result in the closure of the small exhibits section at York and the dispersing of many items in Queens Street. We sincerely hope that this never comes to fruition, for York is quite unique and it would be a shattering blow for irreplaceable items of this sort to be lost for ever or scattered beyond recall.



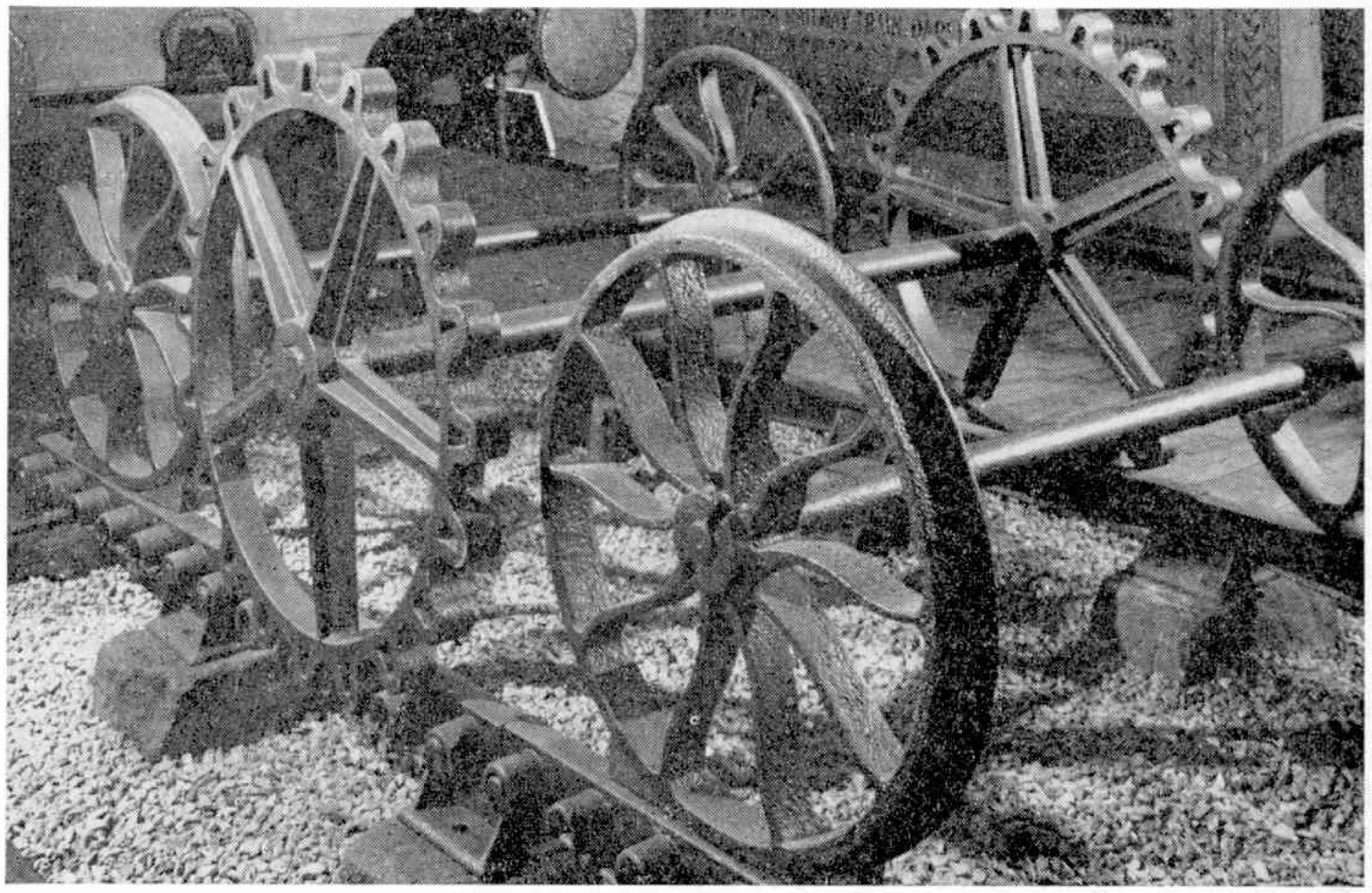
'Aerolite' North Eastern Railway class '66' 2-2-4T before it was moved to the museum



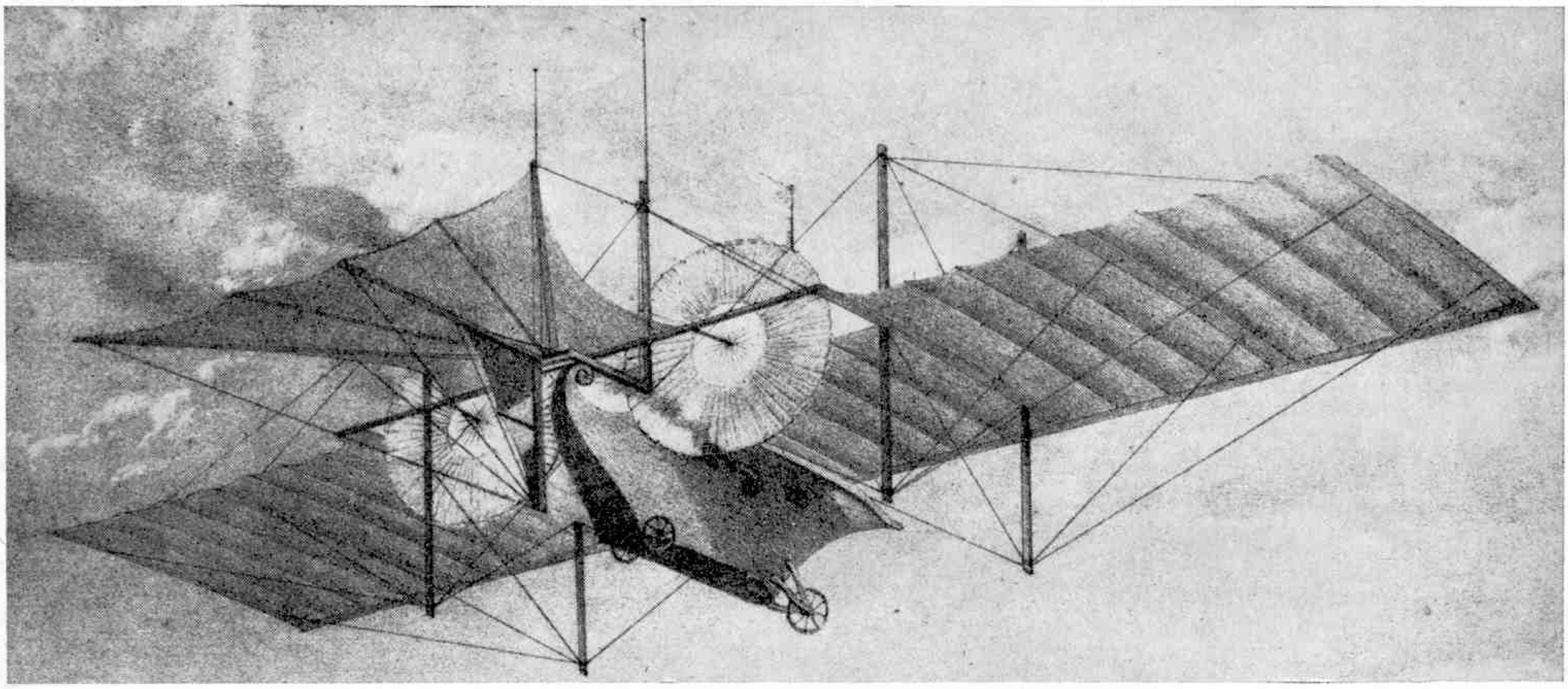
Cab of 'Gladstone' showing controls and the driver's name painted near the top of the cab faceplate

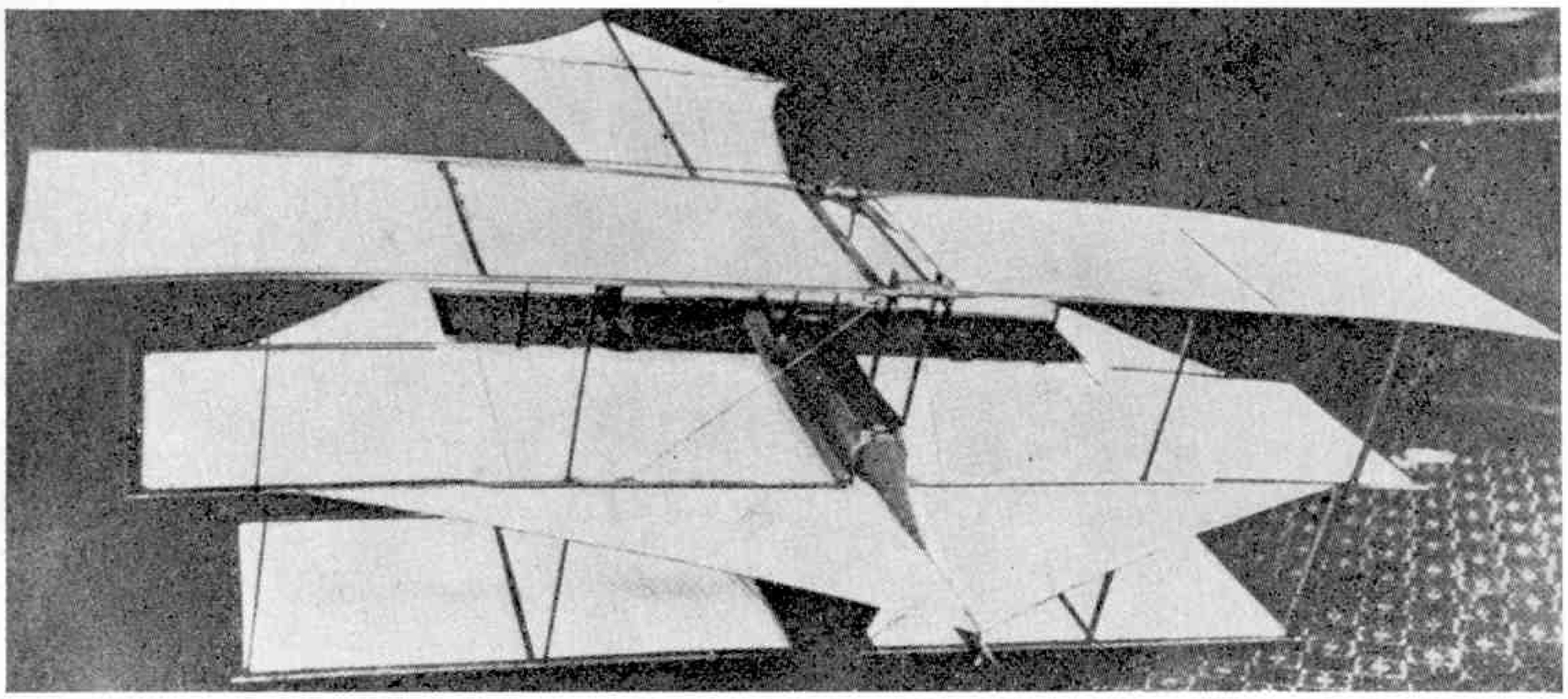


Locomotive No. 1621 built by the North Eastern Railway in 1893



An example of the Blenkinsop rack rail and spur wheel which engages with the teeth on the rail





The fearful looking machine at the top of the page depicts Henson's 'Ariel', and is from a contemporary print issued by the Aerial Transit Company. In Stringfellow's triplane of 1868, shown in the lower illustration, can be seen the beginnings of today's aeroplanes

In these days of superso
the time of John Stringf
planes. Years after, bo
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planes and the followin
these famous flying mac
Aviation Pioneers, and
milestones in the history

FROM the earliest times man has been fascinated by the flight of birds, and made many attempts to fly himself. In the sixteenth century, Leonardo da Vinci considered the problem, and by constant observation, learned the mechanics of gliding and soaring birds. He came to understand that the outstretched wings supported the bird because the upward pressure of the air is equal to the weight of its body, and this is the principle upon which the flight of the aeroplane is based.

Since then, many adventurous men have killed and injured themselves by jumping off towers, cliffs and hills, with flapping wings attached to their arms and legs, but eventually it was realised that the unaided muscles of the human body would never be sufficient in themselves to conquer the problem of level flight.

An important step forward was made in 1810 when a Yorkshireman, Sir George Caley, built and successfully flew a model glider. He produced the main features of the present day aeroplane, it having narrow wings with a cambered shape from front to back. The model also showed how the control of direction could be brought about by the use of rudders.

On December 6, 1799, at Attercliffe, Sheffield, John Stringfellow, one of the early pioneers of the flying-machine, was born. While still a young boy, John and his father moved to Nottingham, where John was put to work as an apprentice for a firm of lace manufacturers. His alert and inventive mind served John Stringfellow well, for before he reached the age of twenty-one, he had earned himself a reputation for miles around Nottinghamshire, as one of the foremost bobbin and carriage makers in the lace trade.

In the early part of 1820, John decided upon a change of scene and moved to Chard in Somerset where, ever ambitious, he set up in business on his own account, from his own house, as a lace maker to the trade.

It was here that Stringfellow met up with another young man after his own heart, with an equally inventive and inquisitive mind, in the shape of William Samuel Henson; already making a local name for himself as an engineer. Both men had, from early childhood, been continually fascinated by the flight of birds, like da Vinci and Caley before them, and both had dreams of the possibility of actually building and flying machines. The coming together of these two minds brought about the design and construction of a light steam engine, with the idea of providing motive power for their first machine.

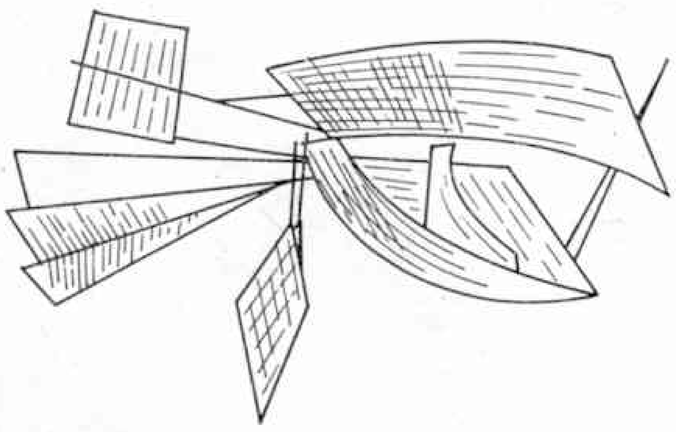
This project, however, took many years to perfect; but eventually in 1842 they filed a Provisional Specification at the Patents Office for what Henson called, 'Certain improvements in locomotive apparatus and machinery, for conveying letters, goods and passengers from place to place through the air'. The following year, with the aid of friends and acquaintances, Stringfellow and Henson formed 'The Ariel Steam Transit Company', the main purpose being to convey passengers and troops to China and India.

The following year, in 1843, other partners were bought out of the company, and the two men embarked upon the more modest enterprise of building experimental models. Between them, they produced several model flying machines, including one with a twenty square feet wing area; but despite many heartbreaking attempts by these patient pioneers, it failed to make a successful flight. One can imagine the two brave men trying to ignore the jeers and laughs of the local people who would turn up to watch; and the bitter disappointments and heartbreaks as their dreams of 'man taking to the sky and flying to the

AVIATION PIONEERS

Stringfellow's model of 1848

Design for a glider by Sir George Caley, 1799



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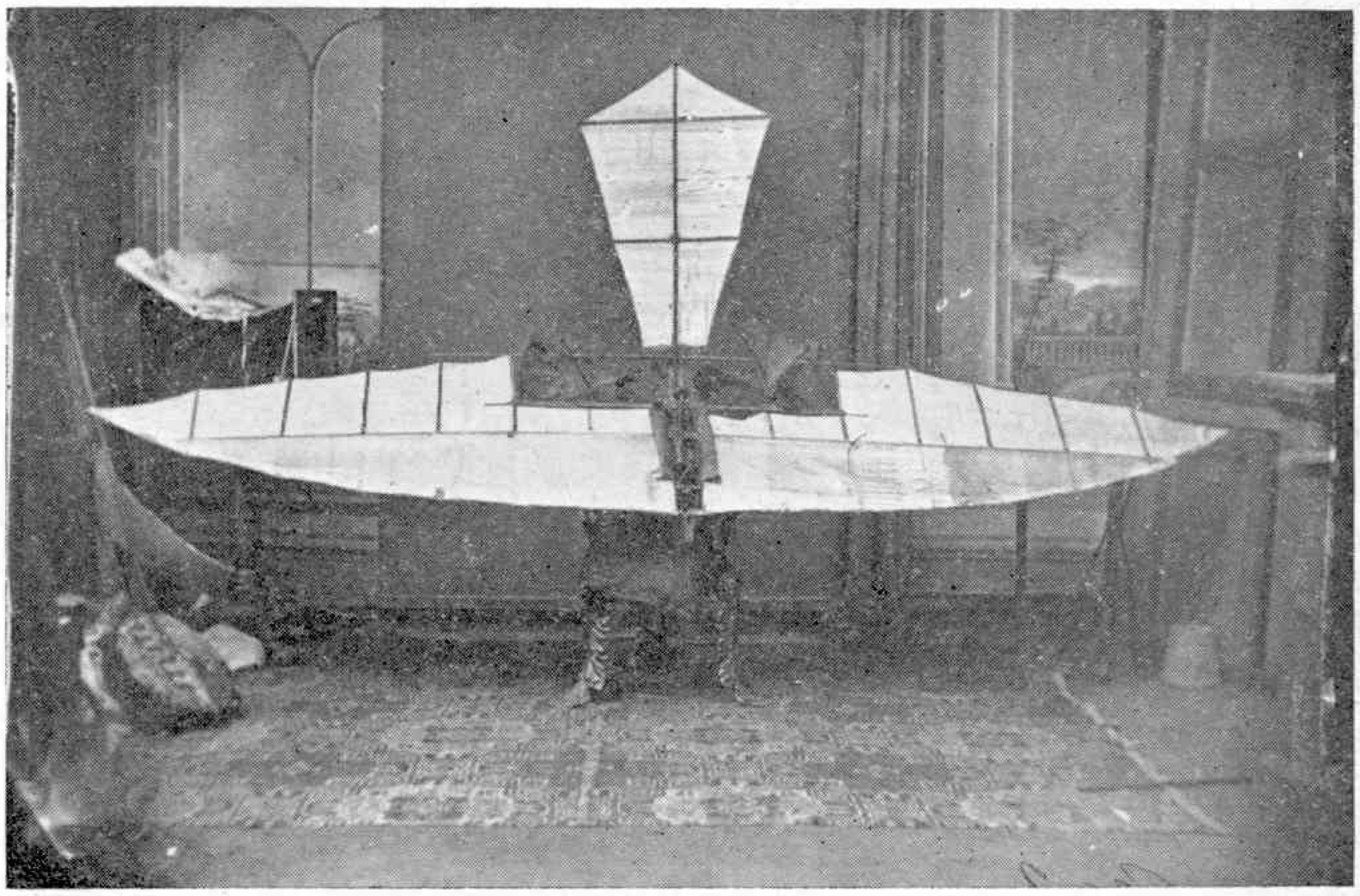
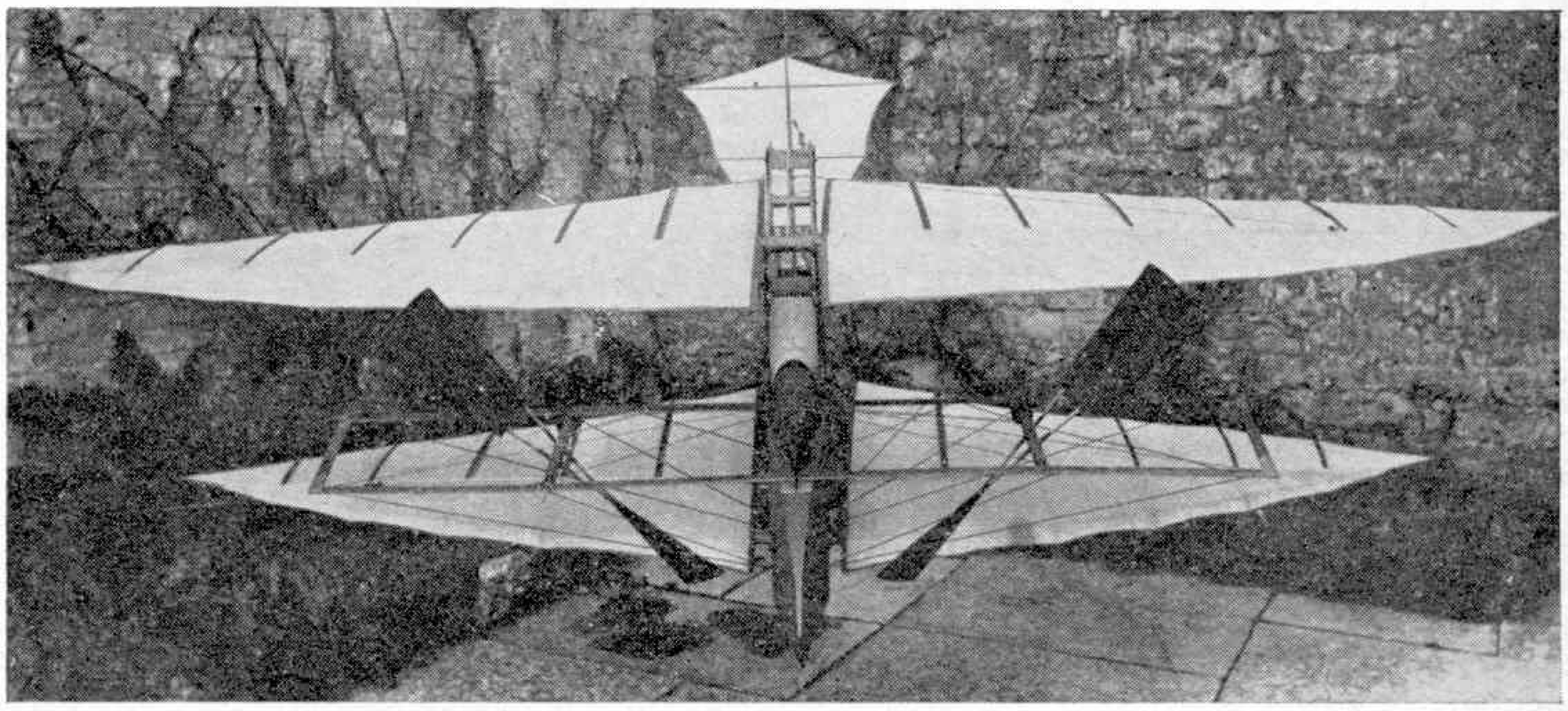




These pictures of aircraft built by John Stringfellow in the 'eighties of the last century give a good idea of the size and construction of these 'model' aircraft. What a sensation they would cause on the flying field today!

ends of the earth' were dashed again and again.

Sad to relate, utterly discouraged by constant failure, William Henson gave up and emigrated to America. John Stringfellow, however, carried on and his interest in the actual aeroplane, as well as the engine, increased. His perseverance resulted in an event of profound importance in the history of mechanical flight, when in 1848 he completed a model mono-plane which measured ten feet from wing tip to wing tip, and was powered by a steam engine, as in his earlier constructions.

Full of hope, John tested this new enterprise at Chard, in a disused lace factory, in a room about 22 yards long and 12 feet high. To the utter amazement of all present, the model gradually rose off the ground and travelled along an inclined wire which ran for about half the length of the room. At the end of the wire, the plane launched into free flight and rose higher and higher until it reached the far end of the room, striking a sheet of canvas, placed there to stop damage upon landing. Amongst the witnesses were J. Riste, Northcote Spencer and J. Toms, all persons of high integrity in Chard.

It was acclaimed at the time, to be the first occasion in the history of the world, when any flying machine had made a free flight. From the county of Somerset, travellers spread the word of the "flying bird", and eventually Stringfellow received an invitation to take his invention up to London to the exhibition in Cremone Gardens, where it made another successful flight, this time of some forty yards.

For some compelling reasons, John suddenly lost interest in his flying machines, and spent the next twenty years engrossed in his lace machine factory, but he did pay a visit to America with one of his sons, in 1849, where, it is presumed, he once again met up with William Henson.

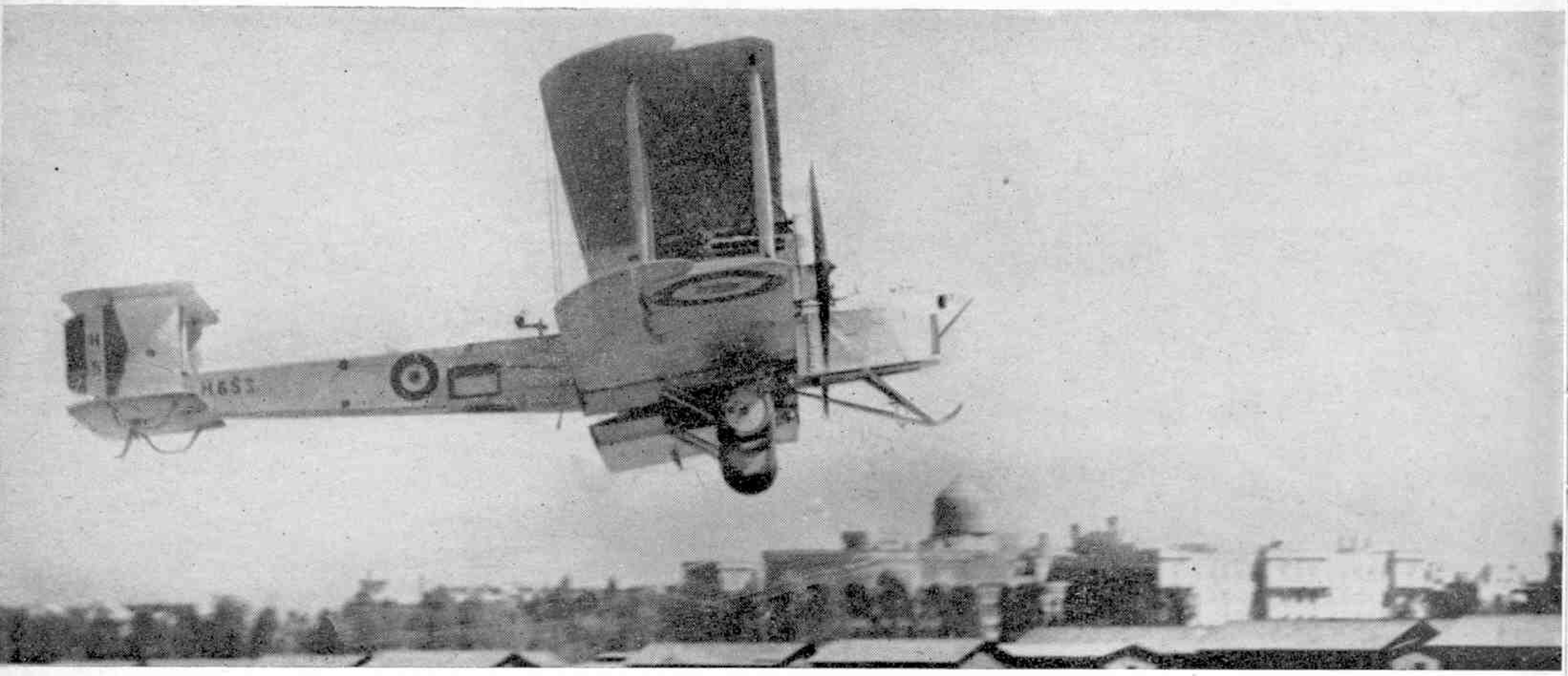
John's experiments and results were, however, not forgotten, and his interests were revived in 1866, by which time the Aeronautical Society of Great Britain had been founded. The Society's secretary, a Mr. F. W. Brierby, persuaded Stringfellow to exhibit at an aeronautical exhibition at the famous Crystal Palace, which he did, this time with a steam driven model biplane, running along a wire. The one horse power steam engine weighed, with its boiler, only a mere 13 lbs., and a special prize of £100 was awarded him by the Society for 'the lightest steam engine in proportion to its power'. The flight was made before the regal figure of the then Prince of Wales (later Edward the Seventh), who insisted that the pioneer be presented to him there and then.

Overwhelmed by his reception at the Crystal Palace, Stringfellow carried on with his experiments, his most treasured one being a model tri-plane, again powered by a very light weight steam engine. Both the tri-plane and the steam engine have been preserved and are now safely housed in the Government Museum in Washington D.C. in the United States.

John's work from now on was carried out in a 70 ft. shed which he erected in the high street in Chard. His confidence in the possibility of aerial flight on a full size scale never wavered, and he persevered in the face of many difficulties and discouragements which broke the faith of other men of his time. We must, in passing, not forget his other skills, which included inventions used by the medical profession, in physiotherapy, and for military use.

He died on December 13, 1883, at the ripe old age of 84, in his beloved Chard. An interesting collection of photographs of John Stringfellow and his models can be seen in the Chard Town Hall.

-JOHN STRINGFELLOW



A Vimy climbs majestically above the sunlit domes and minarets of Heliopolis, bound for Baghdad

FEW of the great pioneers of flying were wealthy. Britain's A. V. Roe saved sufficient money to build his early aeroplanes only by living on five shillings' worth of food each week and sleeping in his small wooden hangar at Brooklands. Over in France, Louis Blériot financed his flying by making headlamps for motor cars, at a time when there were not many cars.

Both men began designing aeroplanes in 1906. In all the world, only the American Wright Brothers had made worthwhile powered flights at that time, and little was known in Europe of what they had achieved or what their aircraft was like. The public as a whole shared the view of Wilbur Wright, who wrote in a letter to a friend, on October 10, 1906: 'We do not believe there is one chance in a hundred that anyone (else) will have a machine of the least practical usefulness within five years'.

To encourage more rapid progress, the Daily Mail newspaper offered a series of prizes ranging from £250 for a model aircraft contest to £1,000 for the first airman to fly across the English Channel and £10,000 for the first to fly from London to Manchester in 24 hours. The editor of a rival newspaper wrote sarcastically that he would give £10 million to anyone who could fly between the two cities! It is as well that nobody took him seriously, as all the Daily Mail prizes were claimed before the end of 1910.

Roe won the first prize of £75 at the model contest held in 1907 and used the money to build his first full-size aeroplane. Winner of the cross-Channel award was Louis Blériot, who flew from Baraques, near Calais, to Dover, on July 25, 1909.

It is difficult to appreciate today how much he deserved his £1,000, and the further £3,000 which he received from the French government. You and I can cross the Channel in about 2½ minutes in armchair luxury in a jet airliner whenever we wish. When Blériot took off from France on that July morning, he had never managed to keep the engine of one of his aeroplanes running for more than about 20 minutes in the air—and England was nearly 40 minutes away! Halfway across, the little 25 h.p. three-cylinder Anzani engine began to overheat and the aircraft slowly lost height. Just as Blériot prepared for a ducking, a shower of rain cooled the engine and he was able to complete the flight.

As well as winning the prize money, Blériot suddenly found himself world famous. He had shown that aeroplanes were capable of flying from one country to another, and the more thoughtful Britons realised that the Channel and the Royal Navy might never again protect them from attack in any future war.

Within three years, Britain began to form an air force—the Royal Flying Corps—and among the first aircraft bought to equip it were Blériot XI monoplanes, not so very different from that used for the cross-Channel flight. The main differences were an increase in wing span, from 25 ft. 7 in. to 34 ft. 3 in., and the use of a more powerful (80 h.p.) Gnome rotary engine, so that a crew of two could be carried on reconnaissance missions.

Both the R.F.C. and the Royal Naval Air Service flew Blériots from 1912 to early 1915, about 25 aircraft going to naval squadrons. Like all the other machines in service on the outbreak of the 1914-1918 war, they were unarmed; but this did not restrict them to a purely passive rôle.

One of the pilots who flew from Netheravon to Dover on August 12, 1914, prior to crossing the Channel, was Captain (later Air Chief Marshal Sir) Philip Joubert de la Ferté of No. 3 Squadron, R.F.C. In his autobiography, *The Fated Sky* (Hutchinson, 1952), he wrote: 'We

had been ordered, secretly, that if a Zeppelin was seen by any of us we were, regardless of our safety, to ram it. I was proceeding peacefully 20 miles north of Portsmouth at about 3,000 feet, when my mechanic gripped my shoulder and shouted in my ear, "Zeppelin, sir!" Shuddering with fright, I looked over my shoulder and saw one of the Spit forts lifting its head above the morning mist. In this light it looked just like an airship—but I had a lot to say to the mechanic when we landed.

'Next morning, we were served out with a motor car tyre inner tube which we were instructed to blow up and wear around our middles in case we fell into the "drink" on our way to France. . . . As he crossed the French coast, one pilot found the Cap Gris-Nez lighthouse so inviting an object that he spent a little time trying to drop his inner tube, like a quoit, on to the spiky top.'

It is a great tribute to the engineering ability of Louis Blériot that a machine designed in 1909—and a monoplane at that—should

AVIATION PIONEERS

PIONEERS IN BATTLEDRESS

have proved capable of development into an aircraft which made possible the first aerobatic displays before the war and some of the first operational flights of the war. Joubert himself, in company with Lt. Mapplebeck of No. 4 Squadron in a B.E.2B, made the first reconnaissance sorties sent out by the R.F.C. on August 19, 1914.

The only marking carried by his aircraft was the number '389' on each side of the rudder; but one of the other Blériots taken to France by No. 3 Squadron was much more conspicuous. Known as the 'Entente Cordiale' Blériot, it was an ancient machine which had been bought originally by the Daily Mail. Under its starboard wing was a large 'Daily,' under the port wing a large 'Mail', while on the rudder were crossed a Union Jack and a Tricolour.

So, at the beginning of the 1914-18 war, one Daily Mail prize-winner, designed as a pioneer, saw service as a military aircraft. When the war ended, an aircraft that had been designed for combat use was modified to win another Daily Mail prize.

This prize, of £10,000, had been offered in 1912 for the first non-stop flight across the Atlantic. The fact that nobody offered £10 million this time, despite the immensity of the challenge, reflects the progress that flying had made in a few years. Nevertheless, it is perhaps as well that nobody tried to win the prize with the aircraft and aero-engines of pre-war vintage.

By the end of the war, aero-engines had become much more powerful and far more reliable; and, as most of you will know, a pair of 360 h.p. Rolls-Royce Eagles carried Capt. John Alcock and Lt. Arthur Whitten-Brown safely over the Atlantic in a Vickers Vimy biplane on June 14-15, 1919.

If you go to London's Science Museum, you can see in the National Aeronautical Collection the actual Vimy used for the flight. With its span of 68 ft., it overshadows every other aircraft on display, but it offered none of the comfort and had few of the safety aids associated with large aircraft today. It was built of wood and covered with fabric, like Blériot's monoplane. It was fitted with radio; but the propeller driving the electrical generator fell off soon after take-off, so the radio could not be used. As

Ready for take-off at Heliopolis. Only navigation aid across the uncharted desert was a furrow ploughed in a dead straight line from one side to the other!

NOTES

Used by France, Great Britain, Belgium and Italy.

Colours :-

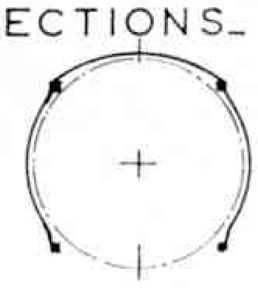
Natural varnished wood with clear doped covering. Cowling aluminium.

Metal fittings black

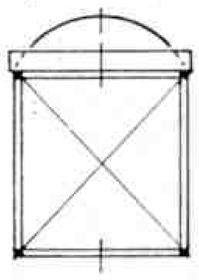
Usually the only markings were a black number on the rudder. Some French aircraft had the blue_white=red stripes on the rudder and roundels on the wings.

Individual aircraft often differed in minor details

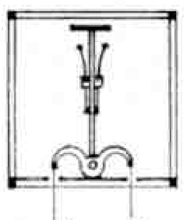
SECTIONS_



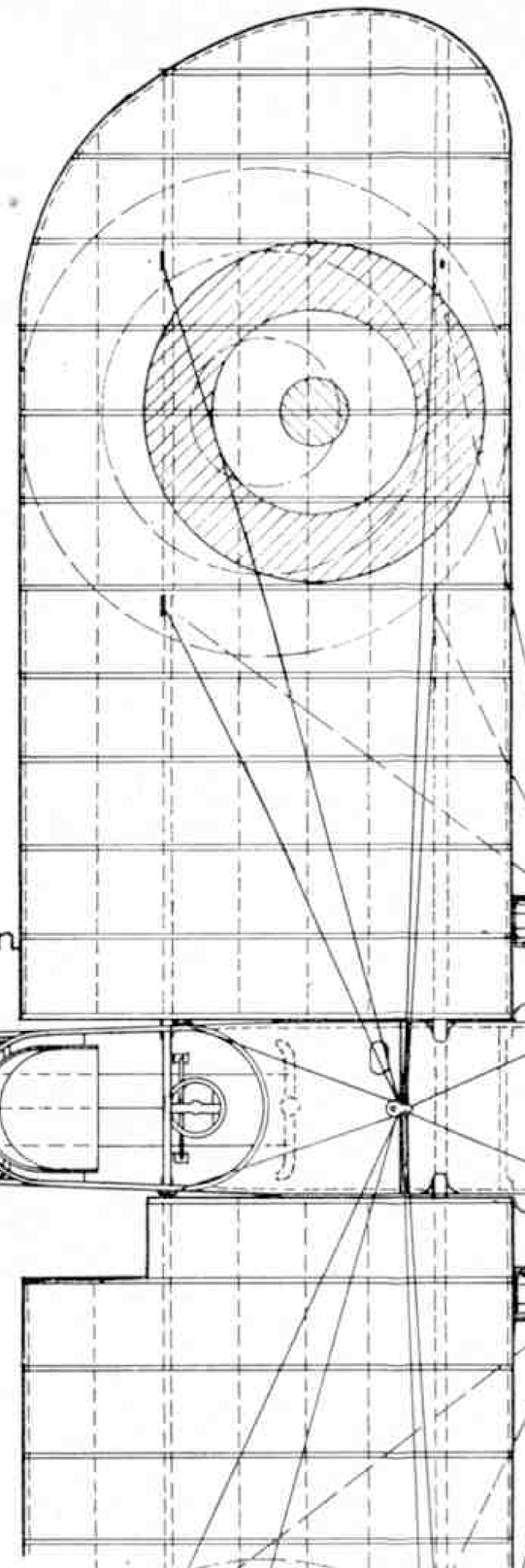
at the engine.

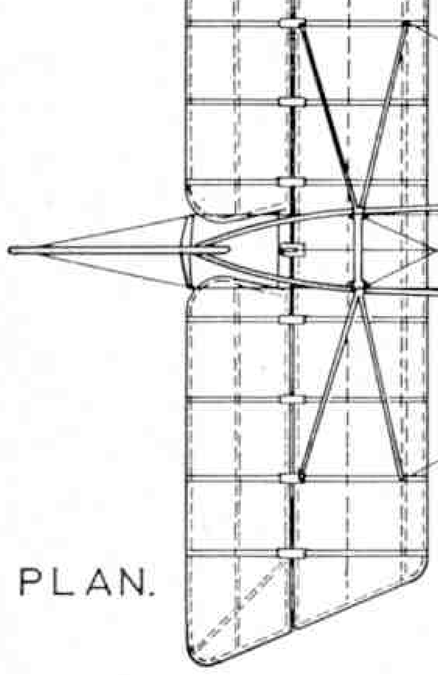


at front spar.



at control column





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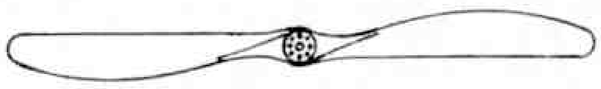

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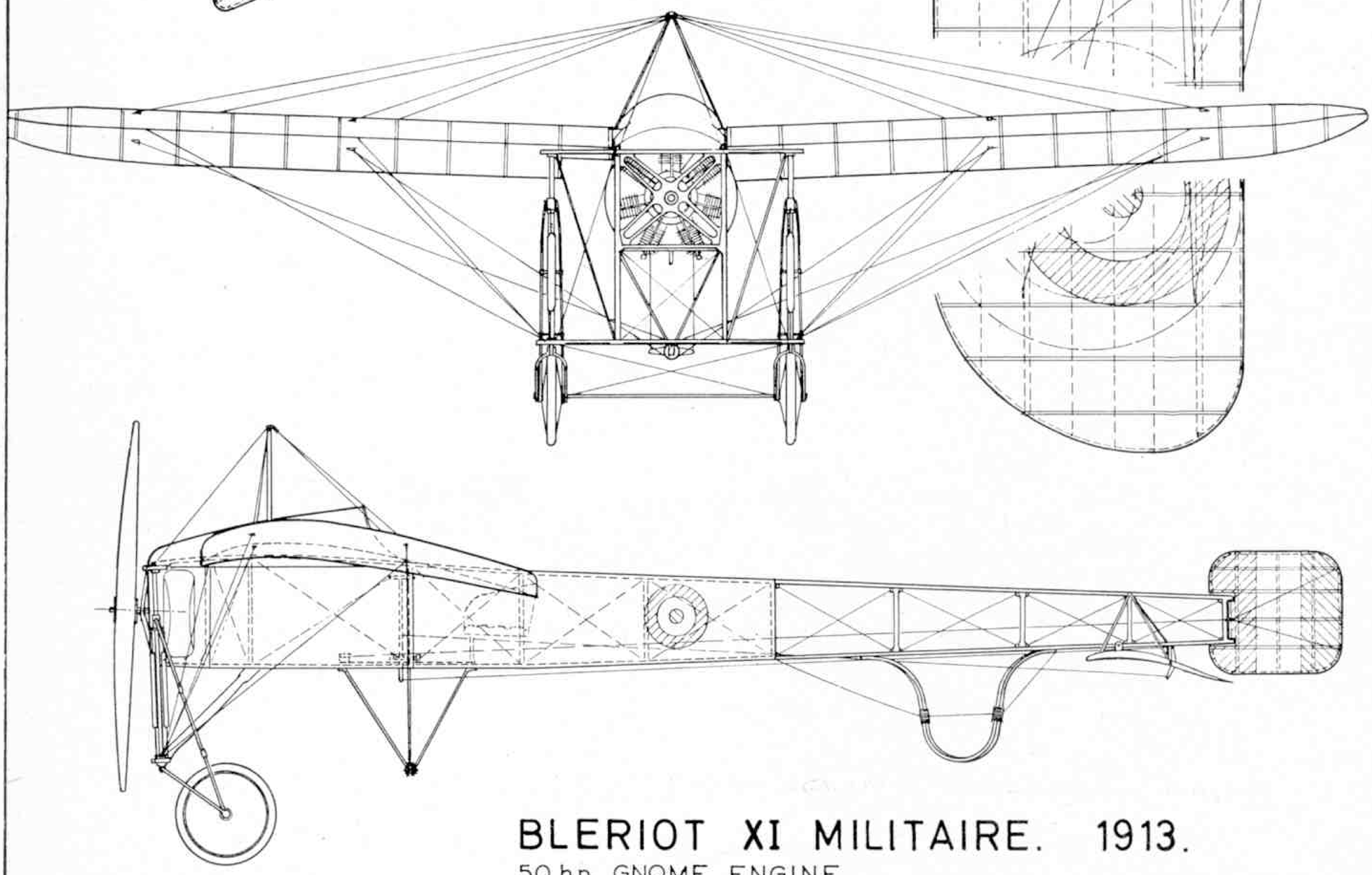


BLERIOT XI MILITAIRE. 1913.

50 h.p. GNOME ENGINE.

Drg. by Ian R. Stair.

0 1 2 3 4 5 6 7 ft.

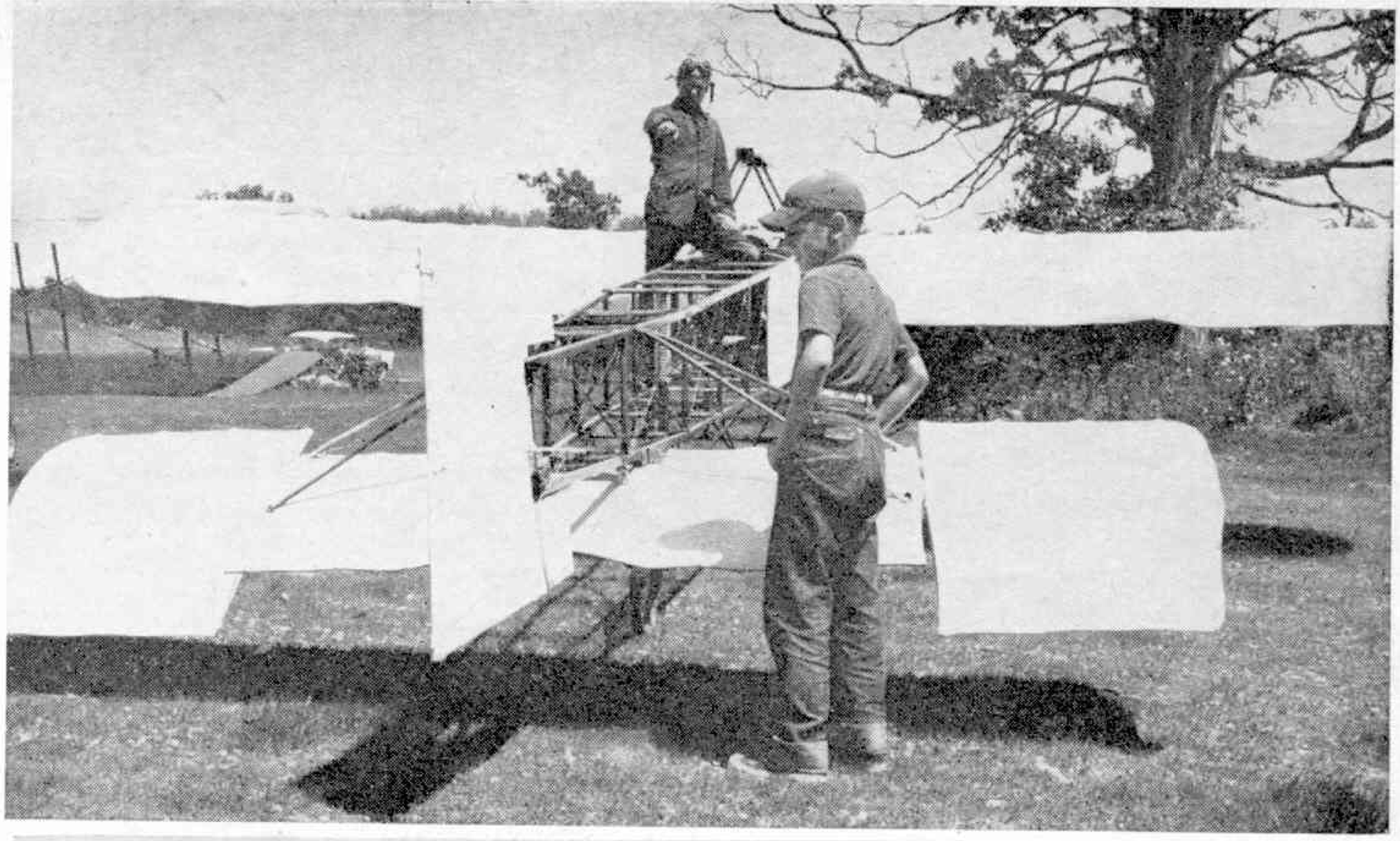
for 'twin-engined' safety, this certainly did not apply to the Vimy when it headed out over 1,800 miles of the Atlantic Ocean. Loaded with 865 gallons of fuel, it could never have stayed in the air if one engine had failed; so there were simply twice as many engines to go wrong!

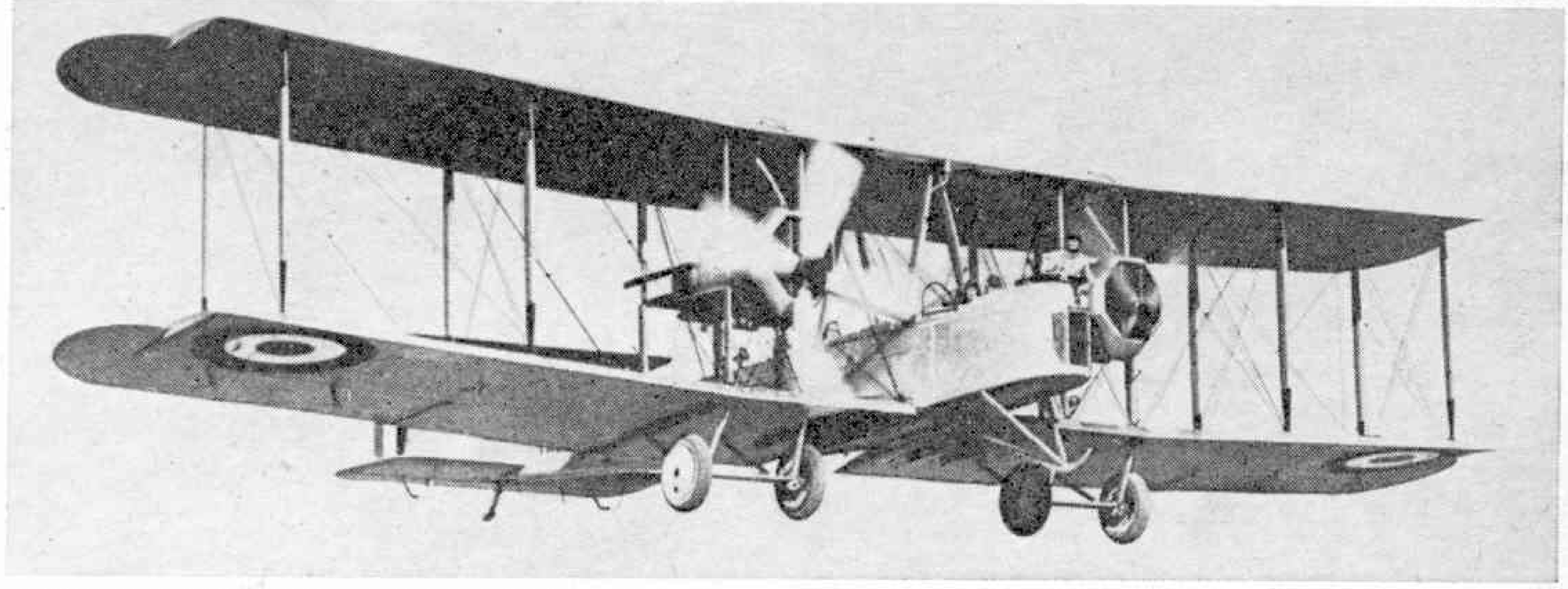
As everyone knows, the Eagles did not fail and, after a hair-raising journey of nearly 16 hours in their open cockpit, Alcock and Brown reached Ireland, gaining knighthoods as well as the £10,000 cheque from the Daily Mail. Other famous long-distance flights by Vimys followed, including the first from England to Australia and the first from England to South Africa.

In R.A.F. service, too, the Vimy made history. It had been designed as a three-seat strategic bomber to attack the German homeland, side-by-side with the D.H.10 Amiens and Handley Page V1500; but the war had ended before it became operational. Several different engines were fitted in the prototypes, and the first few production machines had 300 h.p. Fiat A-12 *bis* engines. Most of the 300 odd production Vimys were, however, Eagle-powered Mk. IV's. They were built by Vickers at Crayford and Weybridge, Morgan & Co. at Leighton Buzzard, the Royal Aircraft Establishment at Farnborough and Westland Aircraft at Yeovil.

Only a single Vimy had reached the R.A.F.'s Independent Force of strategic bombers by the time of the Armistice and it was not until July 1919 that Vimy IV's became fully operational, as replacements for the Handley Page 0/400's of No. 58 Squadron in Egypt. Other squadrons in Egypt followed; while at home the Vimys of D Flight of No. 100 Squadron at Spittlegate represented the entire U.K.-based twin-engined strategic bombing force of the R.A.F. until No. 7 Squadron was formed at Bircham Newton in mid-1923, followed by Nos. 9 and 58 Squadrons in the spring of 1924, all with Vimy IV's.

Bomb-load of the Vimy IV consisted of twelve 112 lb. bombs stowed vertically in the fuselage between the spars of the lower wing centre-section, eight 112 lb. bombs under the lower wings, inboard of the undercarriage, and four more 112 lb. or two 230 lb. bombs under the fuselage, up to a maximum of 2,476 lb. Defensive armament comprised two Lewis machine-guns on a Scarff ring in the nose cockpit, one on a Scarff ring above the fuselage aft of the wings and another in the bottom of the rear fuselage, firing under the tail.





Above: a young visitor looks awestruck at this 1910 Bleriot from Cole Palen's vintage aircraft collection in the U.S.A. Below: a Vimy in flight

Eight first-line squadrons flew Vimy IV's. Replacement by Virginias began in 1924, but No. 502 Squadron retained its Vimys until the beginning of 1929. Meanwhile, some 80 aircraft were re-engined with Jupiter or Jaguar radial engines of 420-450 h.p. for flying and parachute training duties. In the latter rôle, the aircraft took off with a trainee parachutist standing on a small platform and clinging to the outer rear interplane strut on each side. At a signal from the pilot, the parachutists pulled their ripcords and were dragged off their platform by the opening 'chute. A ladder was attached to the port side of the fuselage for free-fall jumps.

So, in various guises, the Vimy soldiered on with the R.A.F. until 1933. It had no opportunity to display its undoubted capability as a bomber, and is remembered mainly for its long-distance flights. Less well-known is the part that Vimys of No. 216 Squadron played in helping to maintain the R.A.F.'s pioneer Cairo-Baghdad mail service across the desert in 1922-26.

Before this service began, letters from England to British troops stationed in Iraq went by sea, via Bombay, and took about 28 days to get there. The air mail service reduced this to five days, even though surface transport still had to be used between Alexandria and London. Sole navigation aid across the uncharted desert was a furrow ploughed in a dead straight line from one side to the other. Refuelling sites were few and far between, in territory where the local Arabs were not always friendly, and the flights at 80 m.p.h., through bumpy skies, called for both skill and endurance from the aircrews.

In 1926 the air mail service was taken over by Imperial Airways as the first stage of a network of routes that was to extend eventually to every corner of the British Empire.

Blériot XI military two-seat reconnaissance aircraft: Span 34 ft. 3 in.; length 27 ft. 6 in.; wing area 248 sq. ft.; weights, empty 770 lb., loaded 1,388 lb.; max. speed 66 m.p.h. at sea-level; rate of climb 230 ft./min.

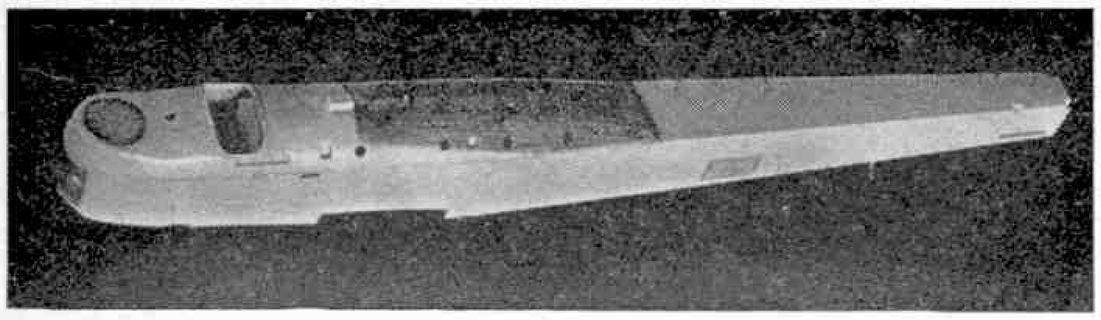
Vickers Vimy IV three-seat strategic bomber: Span 68 ft. 0 in.; length 43 ft. 6½ in.; height 15 ft. 0 in.; wing area 1,300 sq. ft.; weights, empty 7,101 lb., loaded 12,500 lb.; max. speed 103 m.p.h. at sea-level; rate of climb 360 ft./min.; service ceiling 7,000 ft.; endurance 11 hours. **J. W. R. Taylor**

The original nameplate on Cole Palen's Bleriot—type 11, serial No. 56

Ian Stair's drawing opposite of a Bleriot XI Militaire is drawn full-size for 1/48 scale, the same scale as the Bleriot in the Inpact range of veteran aircraft kits. With a little modification, the Inpact Bleriot, which retails at 5s. 6d., would make a very nice Militaire. Conversion would simply entail the addition of the forward fuselage fairing in Plastikard, and the replacement of the old 3 cylinder engine by the 7 cylinder rotary with its associated cowlings and front bearing supports cut from card.

A photograph of the Bleriot XI Militaire will appear in next month's issue.

VIMY GOES TO WAR



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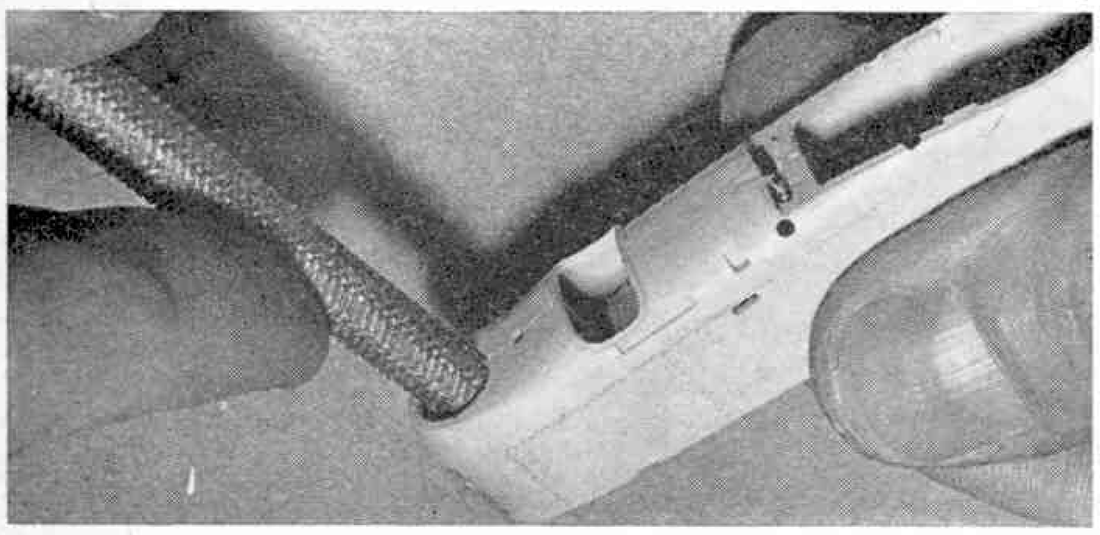

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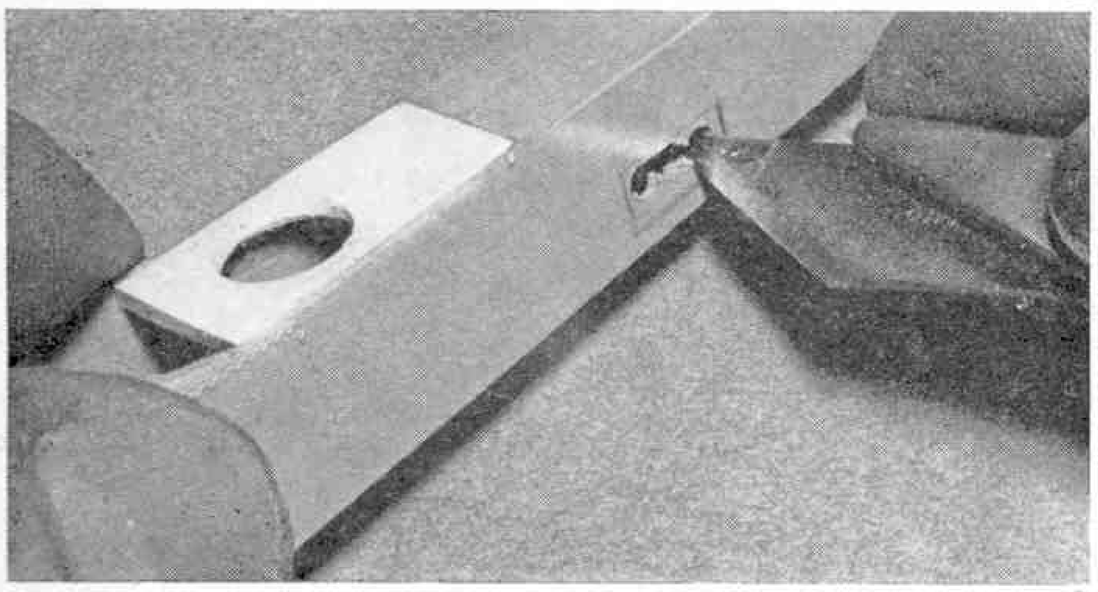

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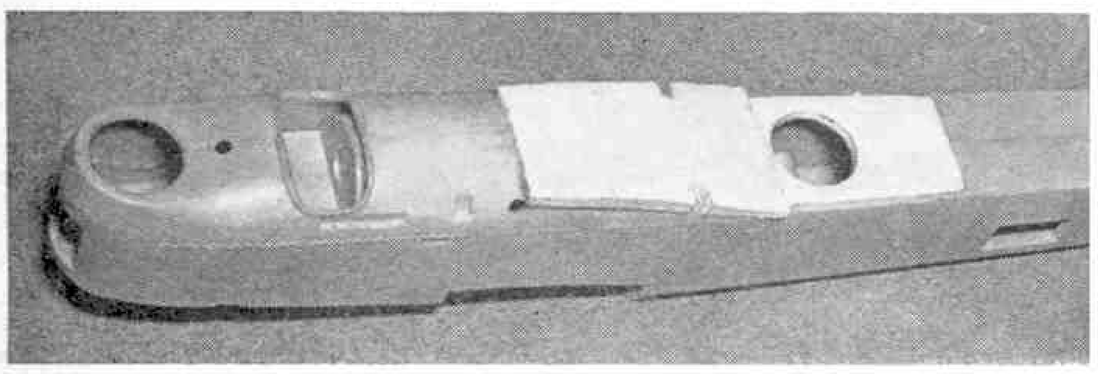

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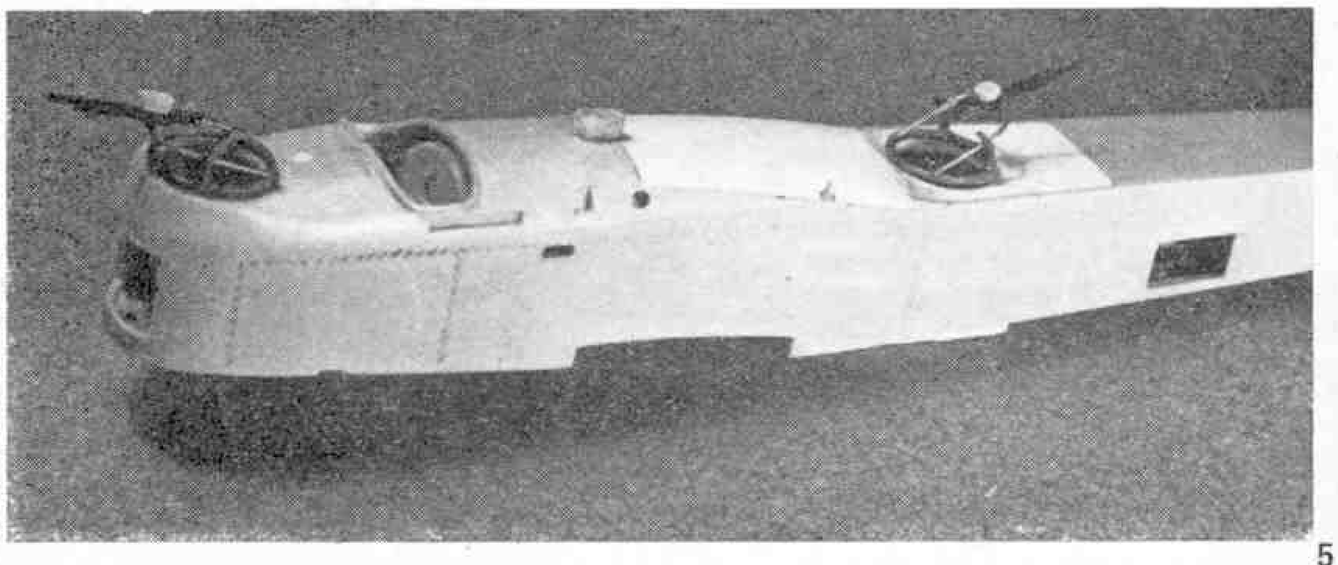

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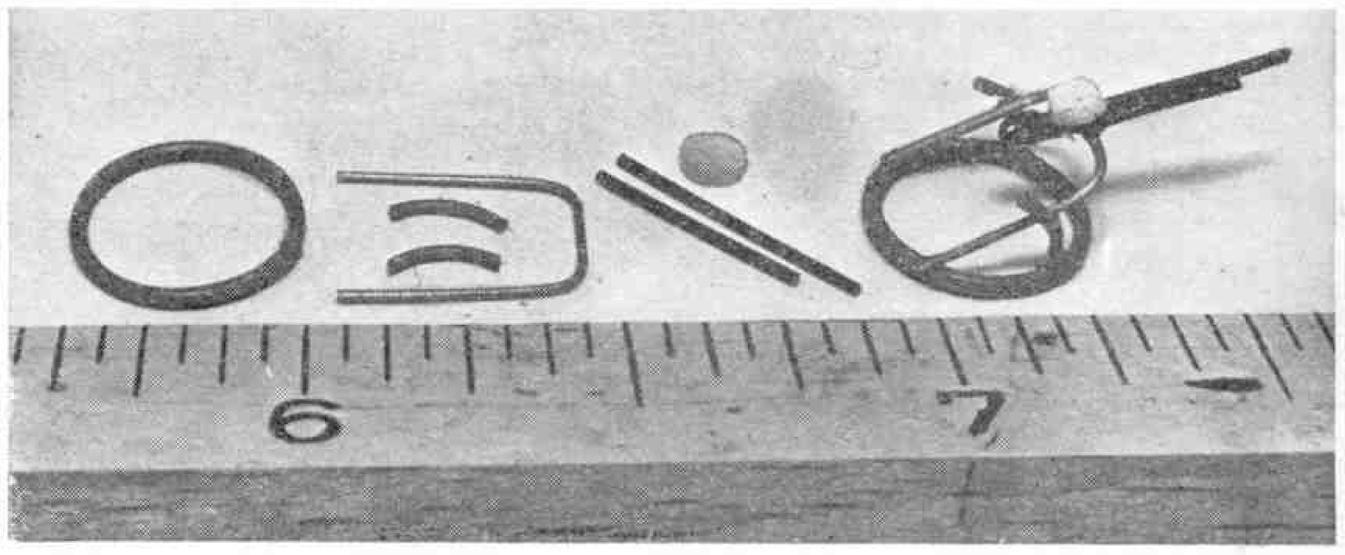

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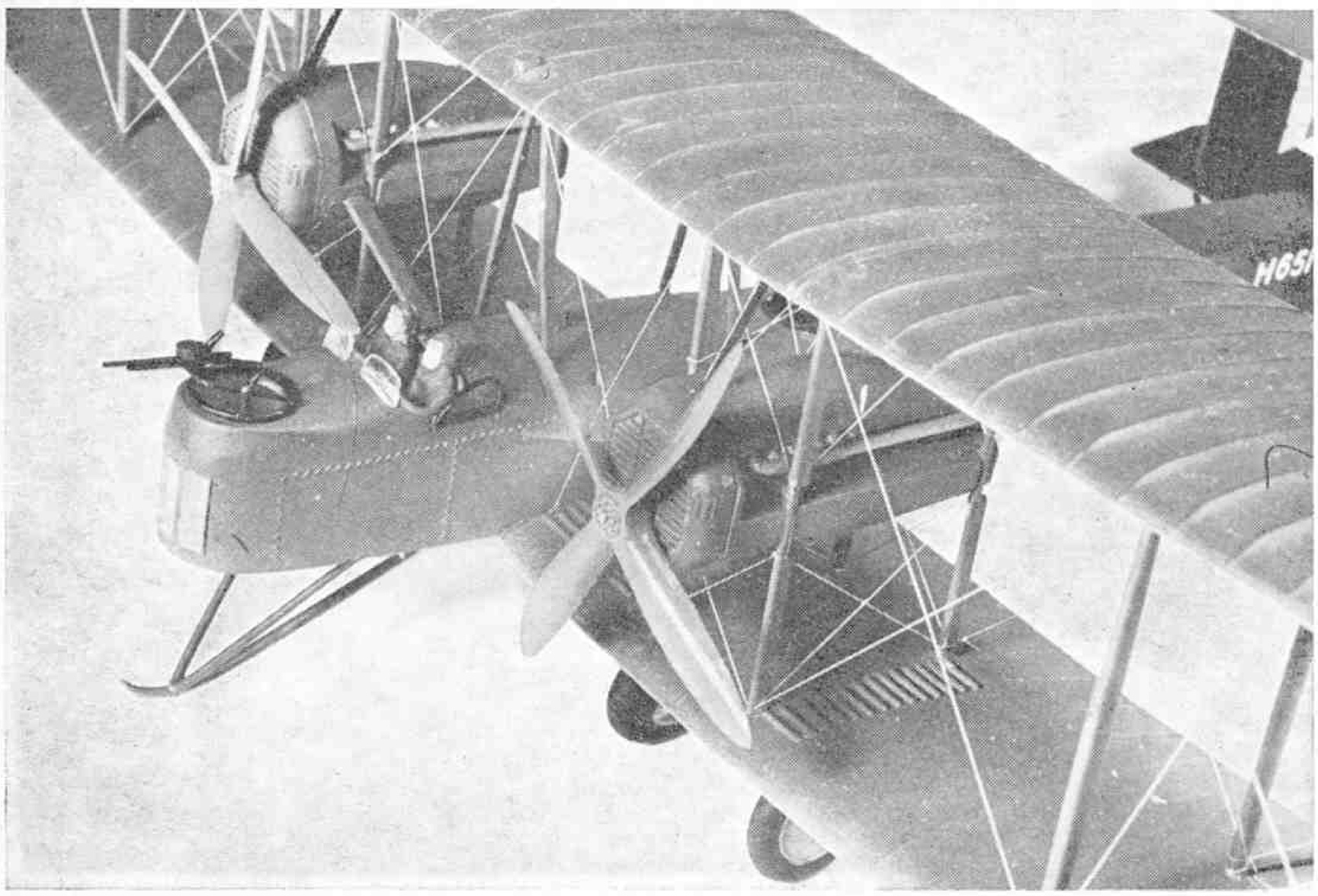

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1 This is the 'standard' Vimy fuselage as supplied in the kit. The areas to be removed are shown shaded—they are the nose windows, nose gun position hole, rear turtle deck and rear fuselage side windows.

2 Using a razor saw and file remove the shaded areas. A round file will be found useful when carrying out final shaping of the gunners' positions.

3 Rear fuselage side windows are easy to pierce if three small holes are first drilled to give the knife a 'start'. Cut *almost* to the line and finish off with a Swiss file. Notice how the new rear decking including a rear gunner's position has been made from 60 thou. Plastikard and let into the top of the rear fuselage. The fabric lacing on the fuselage side will give you the size for this piece.

4 All holes cut and a piece of 60 thou. Plastikard cut (oversize), curved and cemented to form the new, short turtle deck. Notice the two cut-outs in the sides of the deck to take the lower ends of the rear centre section wing struts.

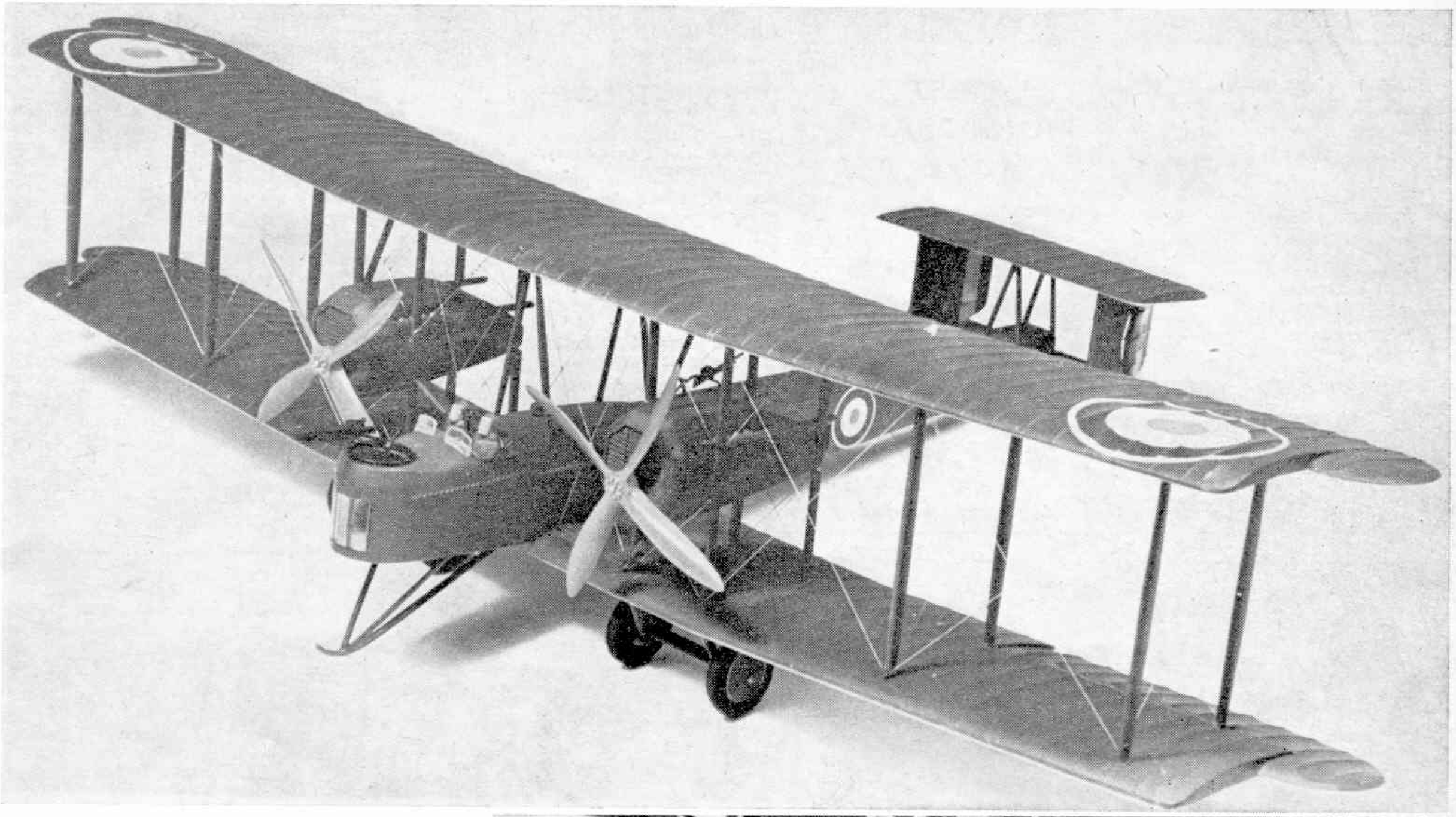
5 When dry, the Plastikard is sanded and filed to blend in with the curve of the upper fuselage and in this photograph you can also see how the guns are positioned.

6 Making the guns is not at all difficult.

BIGGEST model in the Frog Trailblazers series is the Vickers Vimy—the machine in which Alcock and Brown made the first West to East Atlantic crossing back in 1919. The aeroplane they used was a converted World War 1 bomber modified, lightened and fitted with extra fuel tanks beneath an extended fuselage 'turtledeck'.

It is an impressive machine but, of course, it lacks some of the interesting 'bitty' appearance of the original military version. Also the Trans-Atlantic Vimy was finished in clear doped cream coloured fabric—devoid of any markings, whereas the bomber was coloured khaki-green on the upper surfaces and sported colourful roundels and rudder stripes.

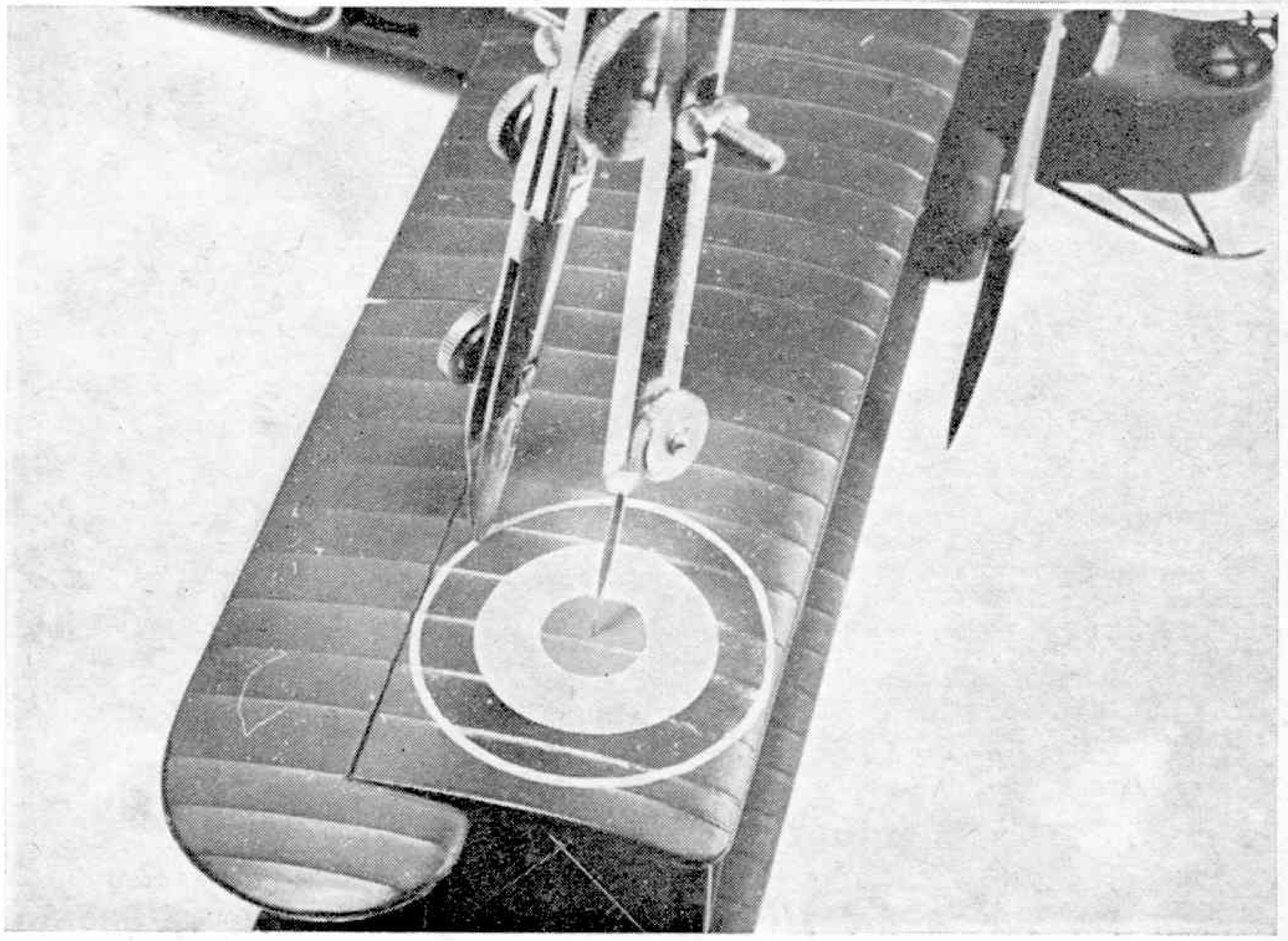
So this month Doug McHard shows you how to turn back the clock and produce a Vimy Bomber. The wings and tail remain unaltered, only the fuselage needs the attention of the plastic surgeon's knife so here goes—



Only seven pieces of heated and stretched plastic sprue are needed for each gun and mount. They are all shown in this photograph together with a complete gun on its Scarff Ring mounting. Use a pair of tweezers to assemble the parts. The Scarff Ring is wound round a small diameter rod such as a paint brush handle—it will spring out to about the right size when the ends can be cemented to form a perfect circle. Make the circular ammunition magazine from a thin 'slice' of plastic moulding sprue. The ruler in the foreground is marked in $\frac{1}{16}$ in. divisions to give you a guide to sizes.

7 You may find it difficult to obtain transfers with the World War 1 white outer ring. Don't let this worry you—it is a simple matter to describe a thin white circle using a pair of ink compasses charged with white enamel. The transfers must be completely dry before carrying out this operation.

8 Here's a close-up of the work on our completed model. The nosewheel supplied in the kit is discarded and in its place a skid is fitted as shown. This, like the guns, is simply made from stretched plastic sprue (as described in our May 1966 issue). The one-piece windshield of the Trans-Atlantic Vimy is divided into two separate units as shown. Rigging (made from Kleintex Invisible Thread) is vital to an old biplane if the true 'atmosphere' of these frail machines is to be achieved. After rigging the thread can be painted grey or silver.



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HELIPORT INTERNATIONAL

Bang up to date is the Minic 'Heliport International' set with which you can add even more exciting action to your table-top motoring

ONE of the disadvantages of air transport, and particularly of internal airways, is that airports often have to be situated some distance from the business centres of the towns they serve. When the towns concerned are large and complex, like London or New York, a traveller can sometimes spend longer getting from the city centre to the airport than he spends in the aeroplane! One of the answers to this problem has been found in New York City, where a helicopter service is in operation between Kennedy Airport and a specially constructed Heliport on the roof of the 59-storey PanAm building, right in the heart of the city. Taxis take an hour to do the trip and cost seven dollars; the helicopter charges the same, but takes seven minutes! (see above.)

The provision of a working Heliport on a model roadway layout would seem, on first consideration, an impossibility, particularly in a small scale. However, when Minic introduced the Heliport International to their HO scale motorway system, they not only achieved the impossible, but made it work! The Heliport International set contains an oval of track, two hand controllers, the Heliport building in easily assembled kit form, an Aston Martin DB5, breakdown wagon, and of course, a helicopter.

The Heliport itself, as can be seen in the pictures, is an attractive modern building with a tower and a large flat roof from which the helicopter takes off. The main part of the building spans the double track roadway. The various walls, all with excellent simulated 'brickwork', are assembled without adhesive of any kind, as all the parts either slide or clip together. The windows and roofs are all pressed into place, and the result is a strong and distinctly attractive building. In fact, the kit goes together so nicely, that it is rather a disappointment to finish it, as it takes only a few minutes to complete.

Just imagine the scene—the red Aston Martin streaks round the bend towards the Heliport, carrying a tycoon on urgent business. The helicopter is waiting impatiently on the roof, and as the car disappears into the building, takes off in a great hurry and buzzes into the sky. With the Minic Heliport, all this actually happens!

The 'works' of the Heliport are simple but extremely ingenious. The helicopter rotor blades turn on a shaft, the bottom of which projects through the bottom of the fuselage. When the helicopter is in position on the roof, this shaft 'plugs' into the large black knob, which can be seen clearly in the photographs. The tail of the helicopter is held steady by a support. The black knob is really part of a very compact clockwork mechanism concealed in the roof. Before the helicopter is placed in position, the knob is wound fully in a clockwise direction. The helicopter is then plugged securely in position, with the tail held in the forked support, and the rotor blades turned gently clockwise until resistance is felt. When a car passes beneath the Heliport, it trips a lever which hangs down from the roof, thereby releasing the spring. The knob spins round and so do the rotor blades, and the helicopter is airborne! Our helicopter attained a height of seven or eight feet, and on several occasions even hit the ceiling, with no ill effects.

If the spring is not wound fully, the helicopter will not operate, and if your layout represents Continental practice, with 'right-hand running' then all you need do is to fix the roof of your Heliport the other way round to that shown in our pictures.

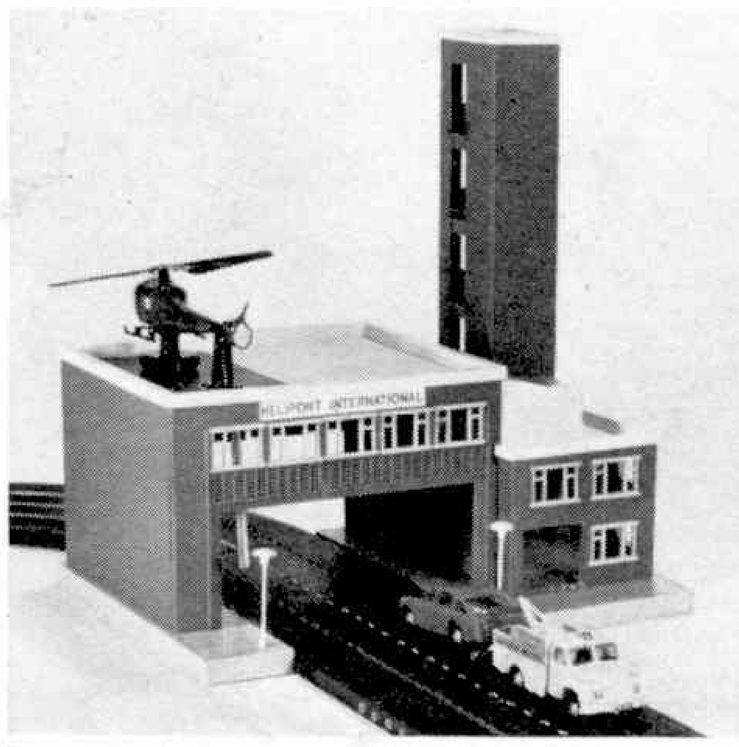
Apart from the Aston Martin, the Heliport International set contains a very attractive breakdown wagon, with a little one-axle towing vehicle, usually known in the garage trade as an 'ambulance'. This neat little combination will tow other Minic cars simply by inserting the rear slot peg of the 'casualty' into a hole in the 'ambulance'.

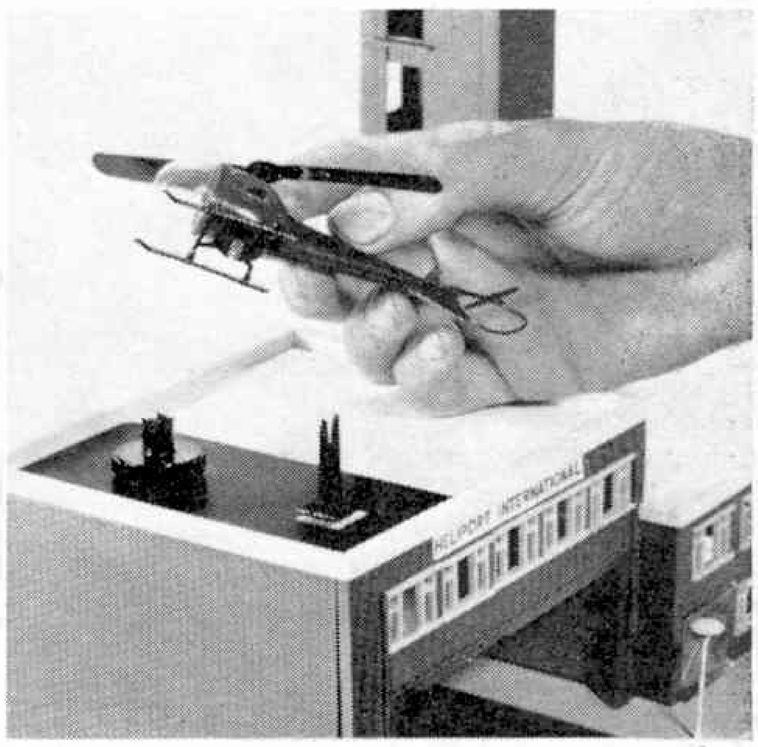
Top left: General view of the Heliport building. The DB5 has broken down and is being towed away. The lever that operates the helicopter release mechanism can be seen over the left hand track.

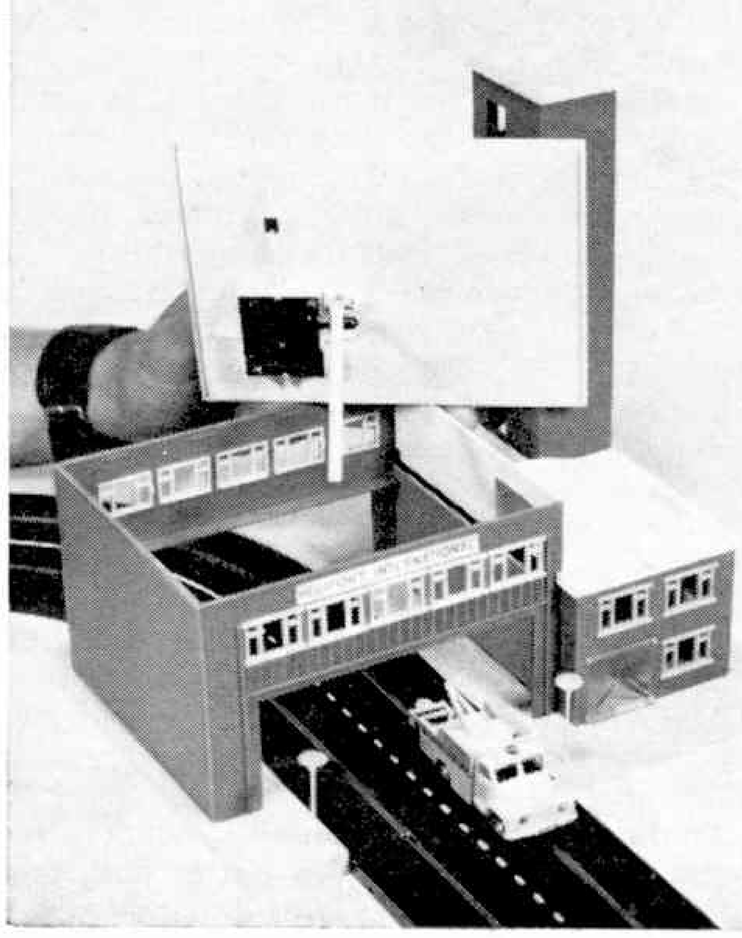
Top right: Close-up of the helicopter, showing the squared shaft beneath the fuselage, and the winding knob and tail support on the Heliport roof

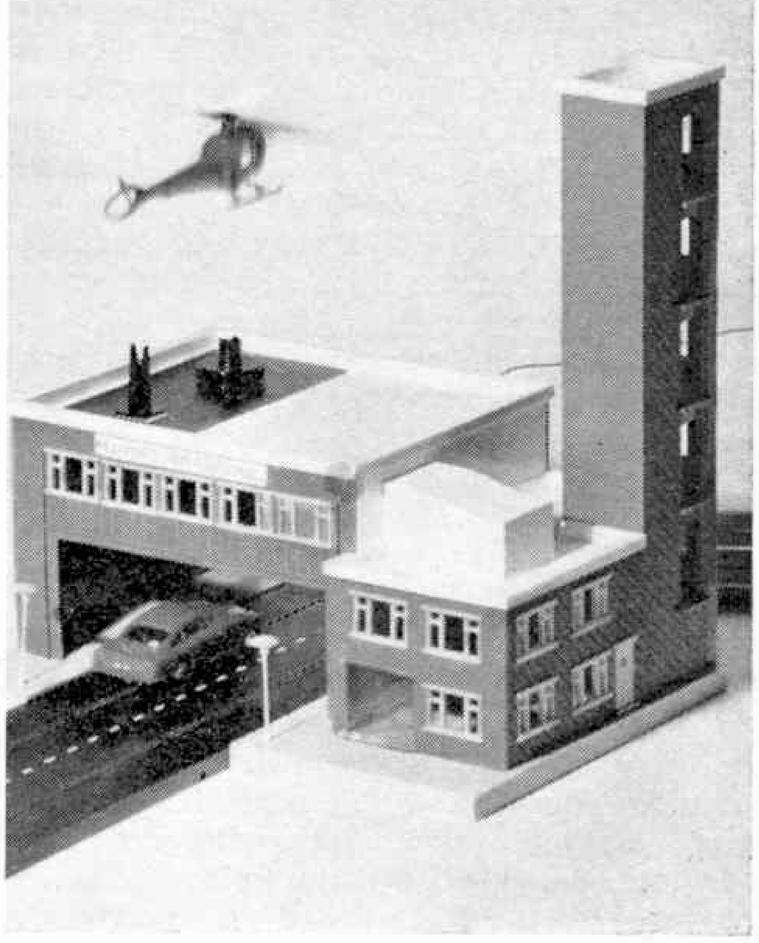
Bottom left: The underside of the Heliport roof, showing the compact clockwork mechanism which operates the helicopter, and the long lever which releases the spring when a car passes beneath.

Bottom right: Take off! As the Aston Martin speeds through the Heliport building, the camera catches the helicopter as it lifts off from the roof.





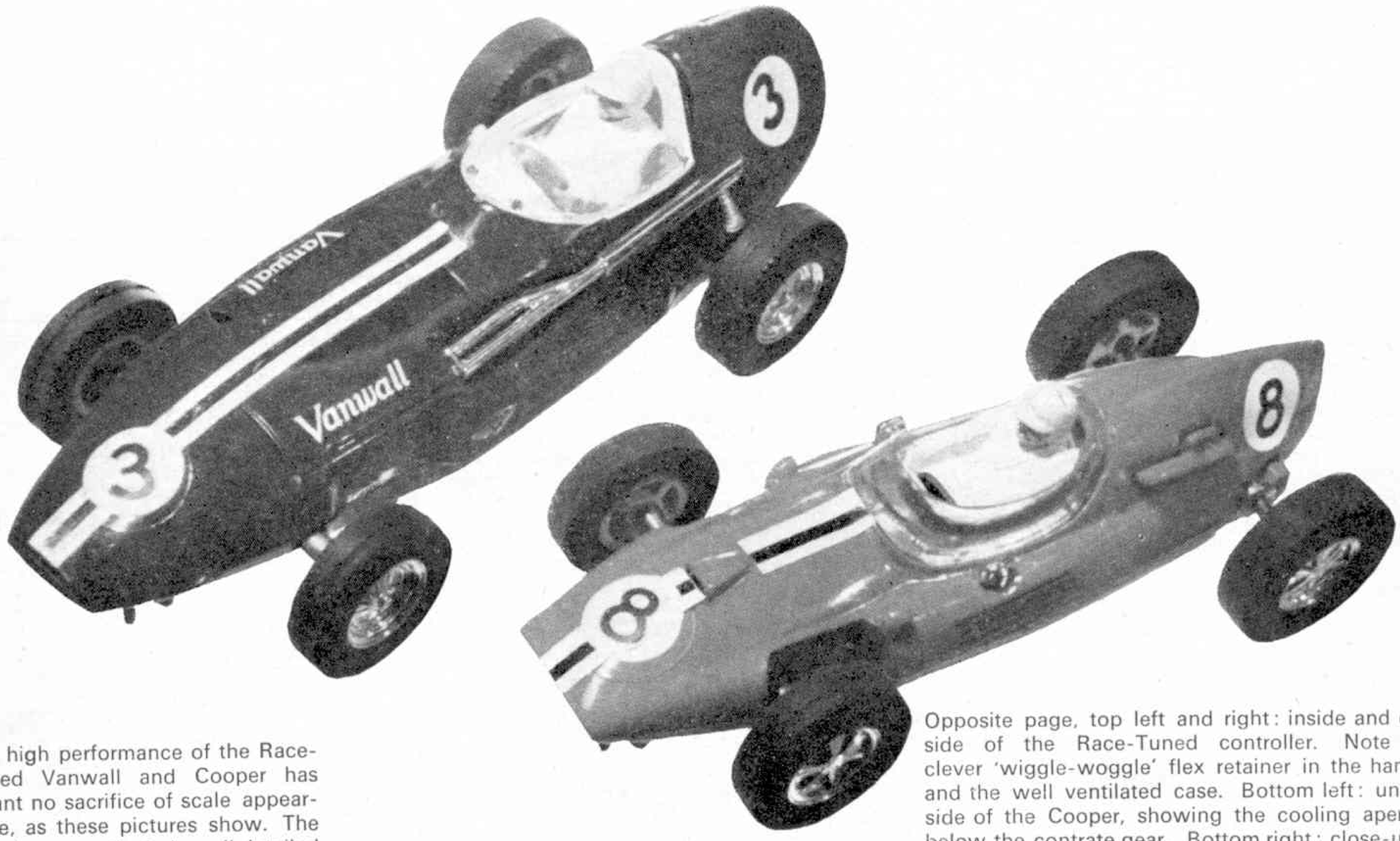




HOT FROM HAVANT

BY GODFREY ARNOLD

From Havant on the Hampshire coast, home of Scalextric, comes an exciting new line of really hot racers



The high performance of the Race-Tuned Vanwall and Cooper has meant no sacrifice of scale appearance, as these pictures show. The wheels are particularly well detailed

Opposite page, top left and right: inside and outside of the Race-Tuned controller. Note the clever 'wiggle-woggle' flex retainer in the handle, and the well ventilated case. Bottom left: underside of the Cooper, showing the cooling aperture below the contrate gear. Bottom right: close-up of the Race-Tuned motor and rear axle assembly

VERY few motors have such an enviable reputation as the Tri-ang Mk. IV that has powered Scalextric cars for seven years. Many of these motors have been rewound by their owners to give much more power than they were originally designed for, with no adverse effect upon this reliability. In the new Race-Tuned Vanwall and Cooper cars Scalextric have installed their own 'rewound' version of the Mk. IV and have made a much better job of it than most of the amateur efforts, for they have built in just the right amount of power to give really exciting performance yet have not, as so many of the kitchen table experts do, made the motor intractable or in any other way difficult to handle.

At first glance the new motor looks exactly the same as the old one, except for the black pole pieces, but a closer examination reveals that the armature is wound differently to the 'standard' motor and using it really reveals the difference.

Extra power is of little use unless a car has the road-holding to match it and in this respect the Scalextric engineers have maintained the improvements by giving these cars a front-mounted, pivoted slot guide similar to that used on the Race-Tuned cars previously available that I described in the October issue of Meccano Magazine.

On the track the performance is very impressive indeed but when you get your new Race-Tuned Cooper or Vanwall, curb your impatience long enough to read the very detailed instructions thoroughly and to run the motor in. As an experiment I ran the Vanwall in on four U-2 batteries until they would no longer turn the motor but did nothing to the Cooper; the Vanwall is now the faster of the two. It is also recommended that one scrubs in the rear tyres if they appear to be out of true. I would say that this is always necessary for it is inevitable that new tyres should have moulding flash on them and, although the tyres on these cars offer excellent grip, they are very hard wearing so that it would take many hours of racing before they gave their best traction if used 'straight from the box'. When doing this it is essential that the axle should be kept parallel to the glass-paper and this is made easier by putting a lump of sponge rubber under the car, taking care not to block the aperture below the contrate gear which allows cooling air to circulate, so that one only has to push down lightly on it to get the tyres into contact with the abrasive. When scrubbing in tyres like this take care not to overload the motor. Use full throttle in short bursts.

Time and trouble spent in preparing the car is amply repaid when one races it and it would be very tempting to remove the stripes and 'Race-Tuned' transfers that are the only indication from the top that it is not a 'standard' car, whereupon the faces of one's friends, as their cars were left behind, would be worth seeing. The slot guide could do with a little more depth for use on club tracks, as outlined for the cars described in the October Meccano Magazine, and I did add a little Plasticine ballast but even without it the performance is very good indeed. The acceleration is rapid but it is not marred by bouncing and twitching, as it is in so many cars, and one would need a great deal of Plexytrack to enable these cars to reach their high top speed.

It would be difficult for me to compare the two cars because I was not at all fair to the Cooper but this one is certainly no sluggard and it is only on a drag strip or a very long straight that it would get left behind by the very fast Vanwall. The appearance, quality and toughness are of the standard that we have

come to expect from Scalextric and these cars would be very useful to those wishing to graduate from home circuits to club racing.

These two cars bring the number of Scalextric Race-Tuned cars that I have tested up to six and someone is bound to ask 'which are the better cars, those made in England or those made in Hong Kong?' This question would be very difficult to answer and I think that any decision would have to be dictated by which full-size original one preferred to have a model of.

The Mabuchi powered cars seem to have slightly better initial acceleration, for the first few inches, whereas, once they are moving the Mk. IV powered ones make up the leeway that they have lost. Any differences are, however, purely marginal, in fact it took me half an hour of drag starts to prove this to myself and it would certainly make no difference to race results.

Although the prime object is to win races, the Race-Tuned cars are not difficult to drive, and to really get the best out of them it is essential to have a suitable hand controller.

The controllers for the very first electric model racing cars were simply on/off switches, but it was not long before somebody fitted a variable resistance in series with the power supply to give progressive control. Dynamic braking came later and controllers became almost universally thumb operated. In America pistol grip controllers started to gain ground but now, just as they led the way seven years ago with the first racing sets with variable hand controllers, Scalextric have yet again gone ahead by making their new controller suitable for either thumb or fore-finger operation.

This new addition to the enormous range of Scalextric products is a masterpiece of ingenious, yet simple, design. I would not say that it is particularly attractive to look at, being moulded in a modest black, and I was, quite honestly, not very impressed until I picked it up and handled it, whereupon I realized that, unlike some 'better looking' models from other makers, it felt 'right' immediately. When connected up and with a car on the track it feels even better and I have never had such good response from my cars as I have with this controller.

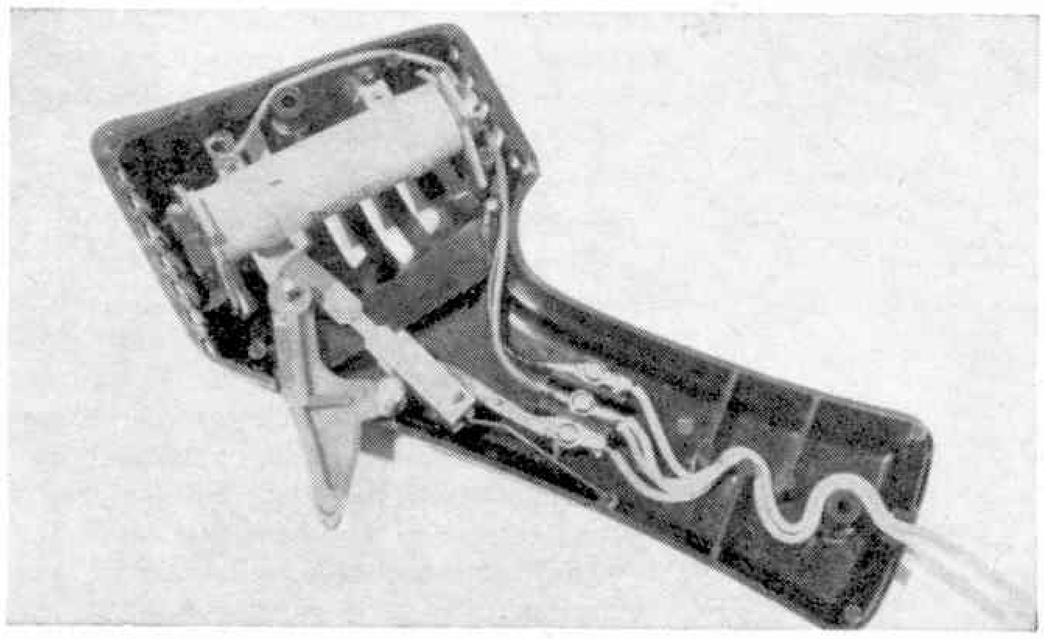
When brand new, the spring is rather strong but this is a good fault, for all springs get weaker after a little use and this one settles down to just the right tension, which is far better than being good to start with and then being too soft for most of its life. Travel on the trigger is not very great but, whereas this would be a disadvantage on most controllers, it is a distinct advantage on this one for it allows much quicker response yet, as the travel of the wiper on the resistor is quite long, it is very smooth.

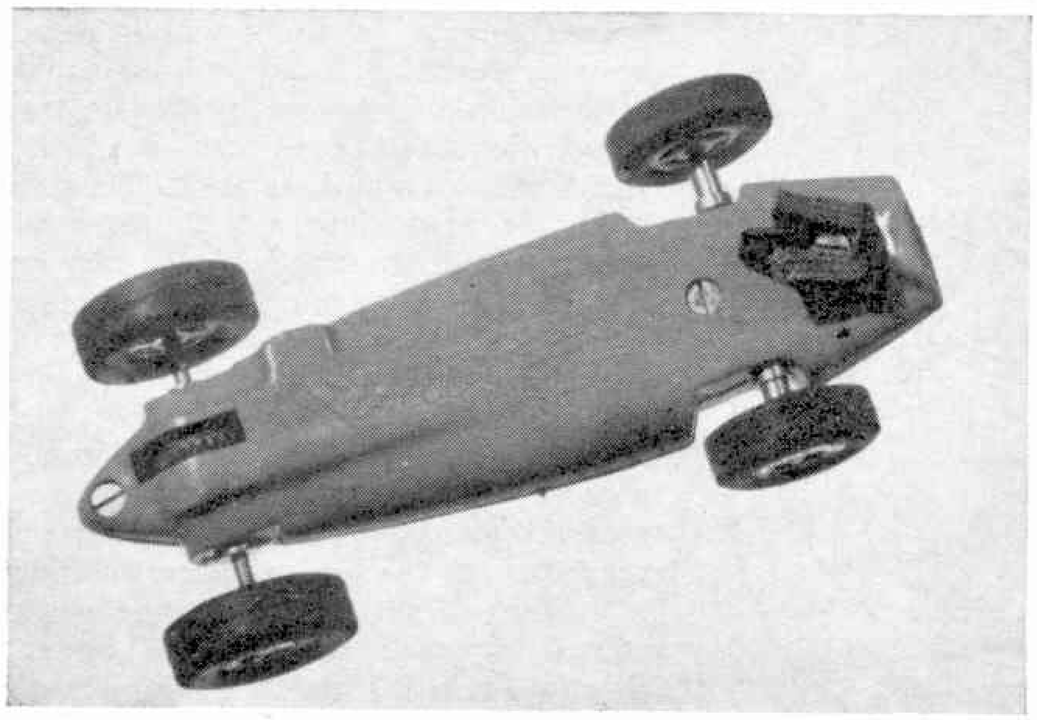
The resistor itself is of the ceramic type and, aided by the excellent instructions, can be easily changed; a 25 ohm one is supplied but a 15 ohm alternative is available and would be preferable if one had any motors which drew very heavy currents. The wiper, instead of having the usual copper or alloy tip, has one made from a soft carbon-like substance so that it is, in effect, self cleaning. This, in practical terms, means that the control does not become jerky as time goes on and explains the unusually good dynamic braking afforded. I carried out braking tests on one car using four different controllers and found that, by using the Scalextric one, I could improve my braking over the best of the others by about 20 per cent!

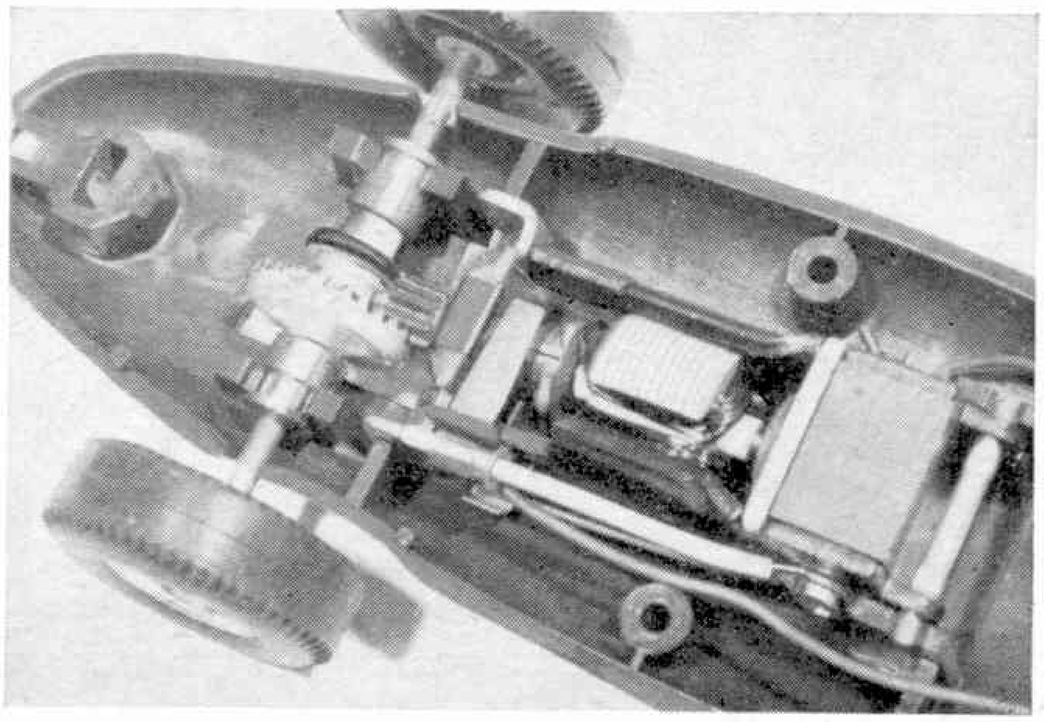
The Race-Tuned controller was, of course, designed to go with the Race-Tuned cars and with them it makes a formidable combination. It does, however, with a suitable resistor, match almost any car. If you are going to use yours on a club track with 2 amp 3 pin sockets, it is a simple matter to change over the leads accordingly and sensible screw connectors are supplied in the handle so that it would be easy to utilize 3 core flex, but I used the existing leads. I separated the longer leads to the track connector, cut off, close to the solder, the one that went to the centre screw and connected the other, from the braid, to the N pin on the plug. The lead from the centre screw, joined to the green lead in the controller, was put on the E pin and the right hand lead, on the black flex, I connected to the L pin.

The position of the resistor itself means that the very adequate cooling ducts cannot be obstructed by the hand and in use this is the coolest running controller that I have ever used. Even after half an hour of continuous use it did not become hot or sticky in its action. It would take very severe abuse, such as fixing it in one position for a time, to burn it out.

This controller is the most completely designed one that I have seen, as is evinced by the very clever 'wiggle-woggle' flex retainer, for if designers can bother about such details as this they obviously consider the whole unit very thoroughly. I will be surprised if the Scalextric Race-Tuned controller does not become standard 'wear' for most discerning drivers in the near future.







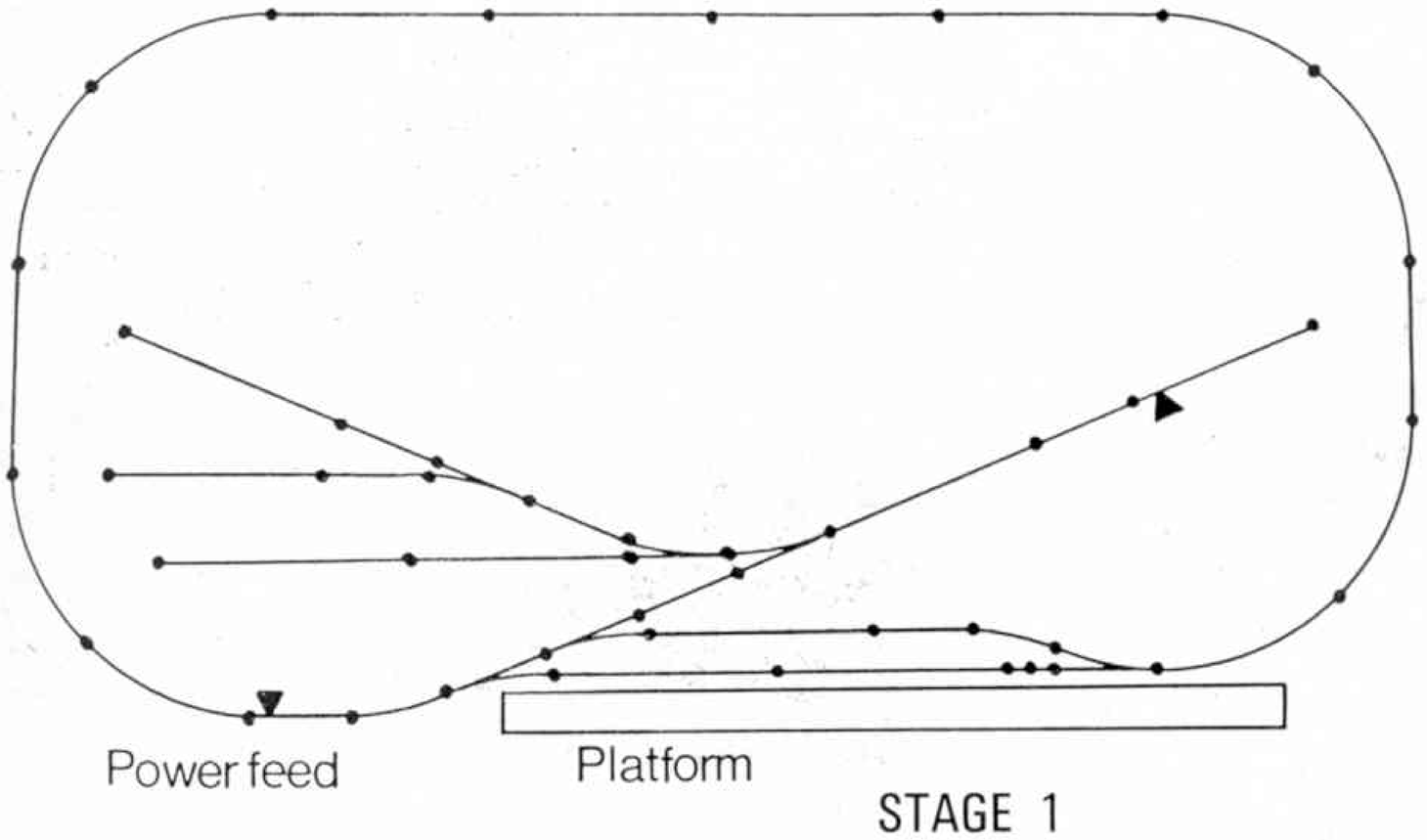
STAGE BY STAGE

by Mike Rickett

MANY readers have pointed out in their correspondence that it is some time since we published a layout plan in the magazine and we have therefore decided this month to examine a fairly ambitious but interesting Tri-ang Hornby layout plan. The plan illustrated here differs from other plans published, in that we shall show how it can be built in five different steps or stages, using the components supplied in the first train set as the starting point.

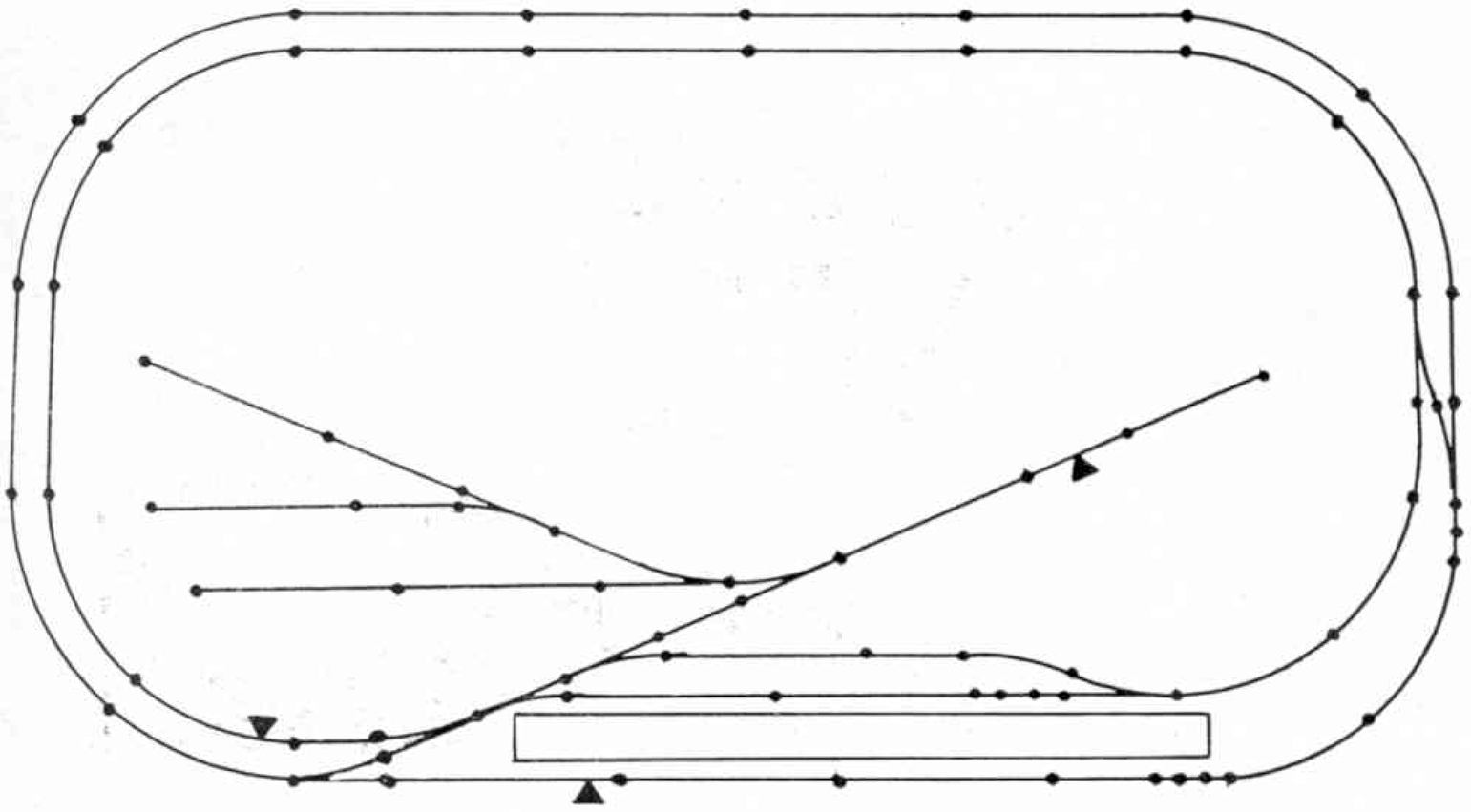
It is unfortunate that so many enthusiasts fail to appreciate the benefits of planning the future growth of a layout right from the beginning, because this helps to avoid mistakes and also, although a layout is often incomplete during its early stages, it is by no means devoid of interest and can provide the necessary ingredients for enjoyable operation. In short, each stage of construction should result in a self-contained layout.

The plan shown in stage one is the first step away from the basic train set oval, which in this case has been elongated by the addition of straight rails, either double straight (R.480) or single straight (R.481). A passing loop has also been added to make it possible for two trains to be operated over the layout. One train would run in to the platform road and a second train, preferably a goods, could depart from the adjacent line on the passing loop once the train has been marshalled in the goods yard. You will have noticed the long siding on the right of the goods yard which is in a most useful position because it can act as a headshunt for trains being sorted or shunted in the three sidings. The locomotive would have to be positioned at the front of its train before this would be possible, of course. A refinement, although I would consider it quite essential, is an Uncoupling Ramp (R.488) at the end of the headshunt to enable the locomotive to be uncoupled and left at the end of the siding. Uncoupling ramps should also, of course, be placed on each of the sidings and passing loop road.



STAGE 1

STAGE 2



The second stage, which can be added as funds and time permit, consists of a second oval of track and two cross-overs. An additional oval is a useful extension since it provides the layout with up and down lines, enabling two trains to be run with no difficulty providing, of course, that two control units are in use. The cross-over on the left of the station platform allows trains to run from one oval to the other and both cross-overs, used together will, you notice, form a passing loop in a similar way to the one in the station.

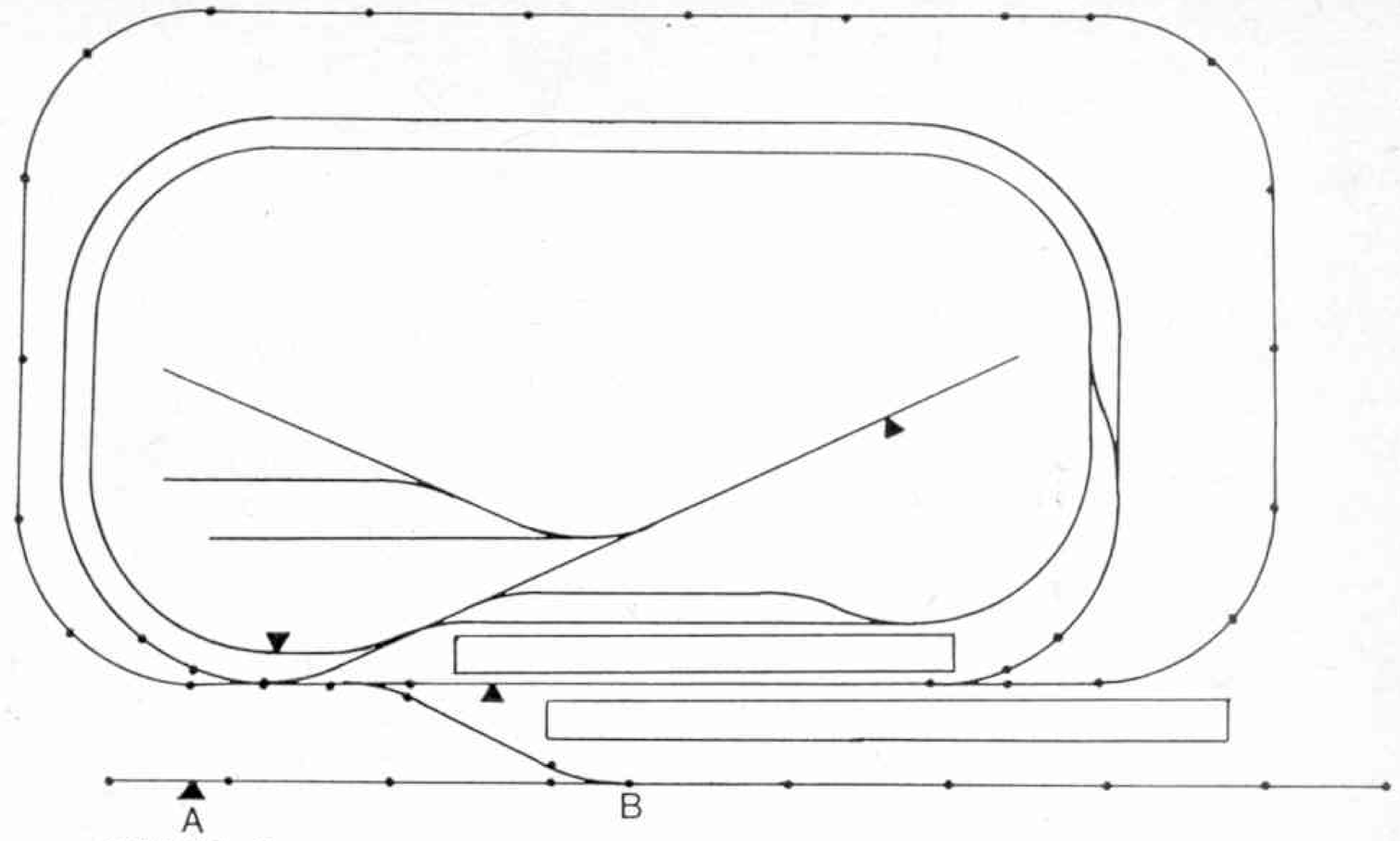
As it now stands, the layout can provide many hours of pleasure and it would probably be desirable to allow your rolling stock to accumulate, before proceeding to stage three, where additional track is added. Forming almost an additional oval, this could quite easily be made into a high level line since it is of a sufficient length to give easy gradients. By the use of Tri-ang Hornby Inclined Piers (R.457), which are available in a set of seven, it should also be possible for you to add a girder bridge (R.5015) or other high level accessories. Single high level piers are available separately (R.453), and you are by no means limited to building gradients only. The gradients for the girder bridge or, indeed, any other high level track must, of course, be started at each side of the layout, from shortly after the point joining on the oval to the remainder of the layout. Stage three includes an additional platform and also a

siding, which can be used for goods or carriage storage. You will notice in this plan that the power feed A is not placed between the points at the other side position B as perhaps you would have expected. This is because the newly laid siding will only be used when the two points leading to it are set accordingly and in this case it will receive power from the feed added in stage two. If the point B were set to the straight, the siding would not receive current without the additional power feed at A.

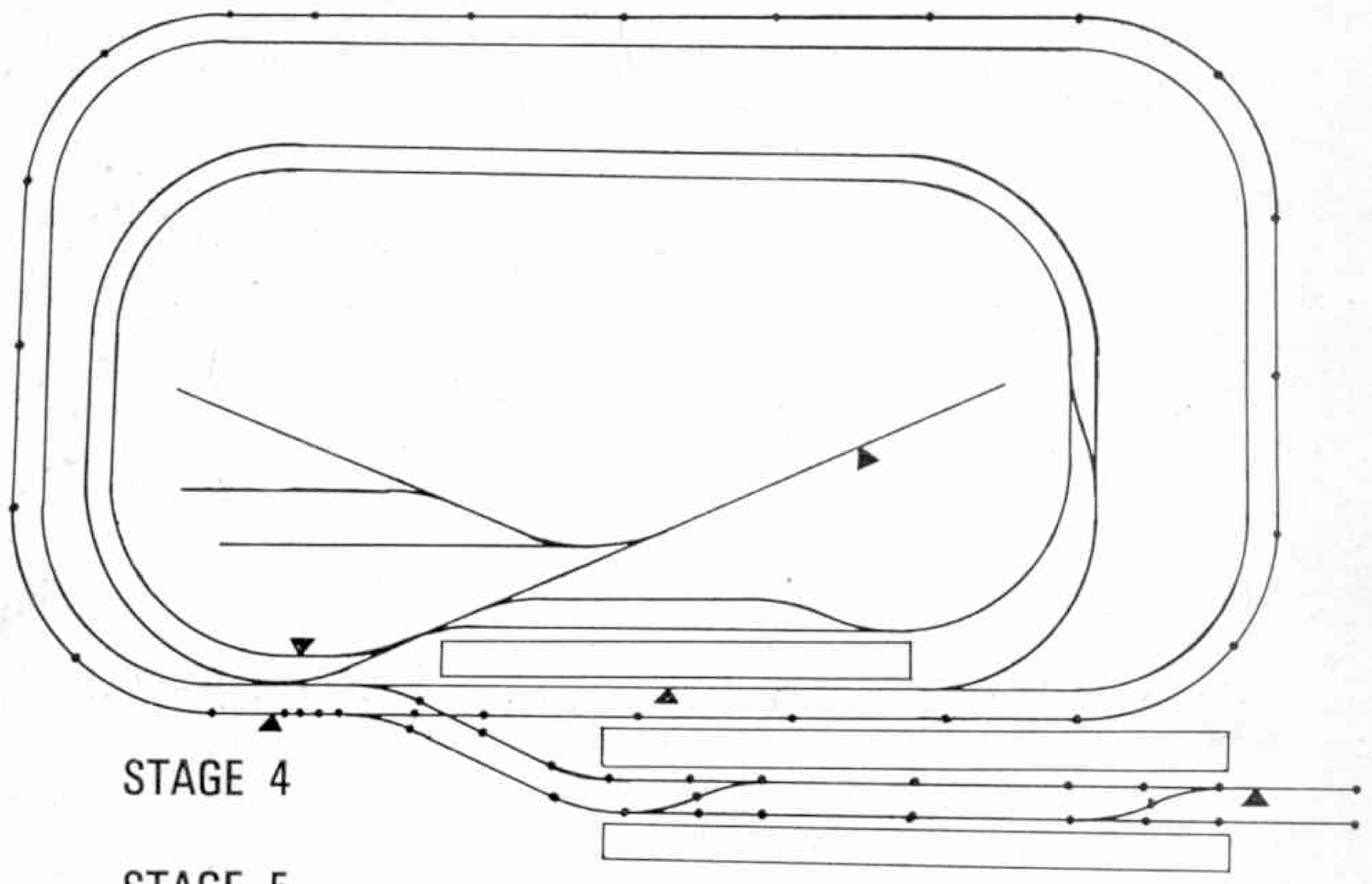
Stage four sees more extensive additions in the shape of a completely new oval outside the high level line just described. To give greater variety, you might decide to leave this line level instead of forming yet another high level line although, of course, you could if you wish have both outside ovals on a higher level than the inside ovals. In the station area, the track existing in stage three has had to be modified and a second road has been added to give yet another platform space. A diamond crossing has been necessary to accomplish this and the two cross-overs are, of course, very necessary to allow locomotives to be run round and recoupled at the other end of their trains. Although this operation could be done in stage one, it was limited to much shorter trains, and by the time your layout has grown to the size envisaged in stage three, I expect your rolling stock will also be more numerous and your trains longer, and it is therefore a necessary improvement.

The final stage involves only a goods yard and facilities for stock storage, the two upper sidings forming, in effect, a headshunt for the two roads of the terminal station. The layout could, of course, be extended beyond this and one way would be to continue a double track in what is now the terminal station, to a new terminal station on a separate baseboard. This, however, would be dependent on the space available and also the length of running between the two stations, since it would not create the desired effect for the locomotive of the train to enter the terminal station while the end coach is just leaving the through station!

The plans are sectionalised for Tri-ang Super 4 track and all power feeds are shown. We have also provided a parts list for each stage of the layout.

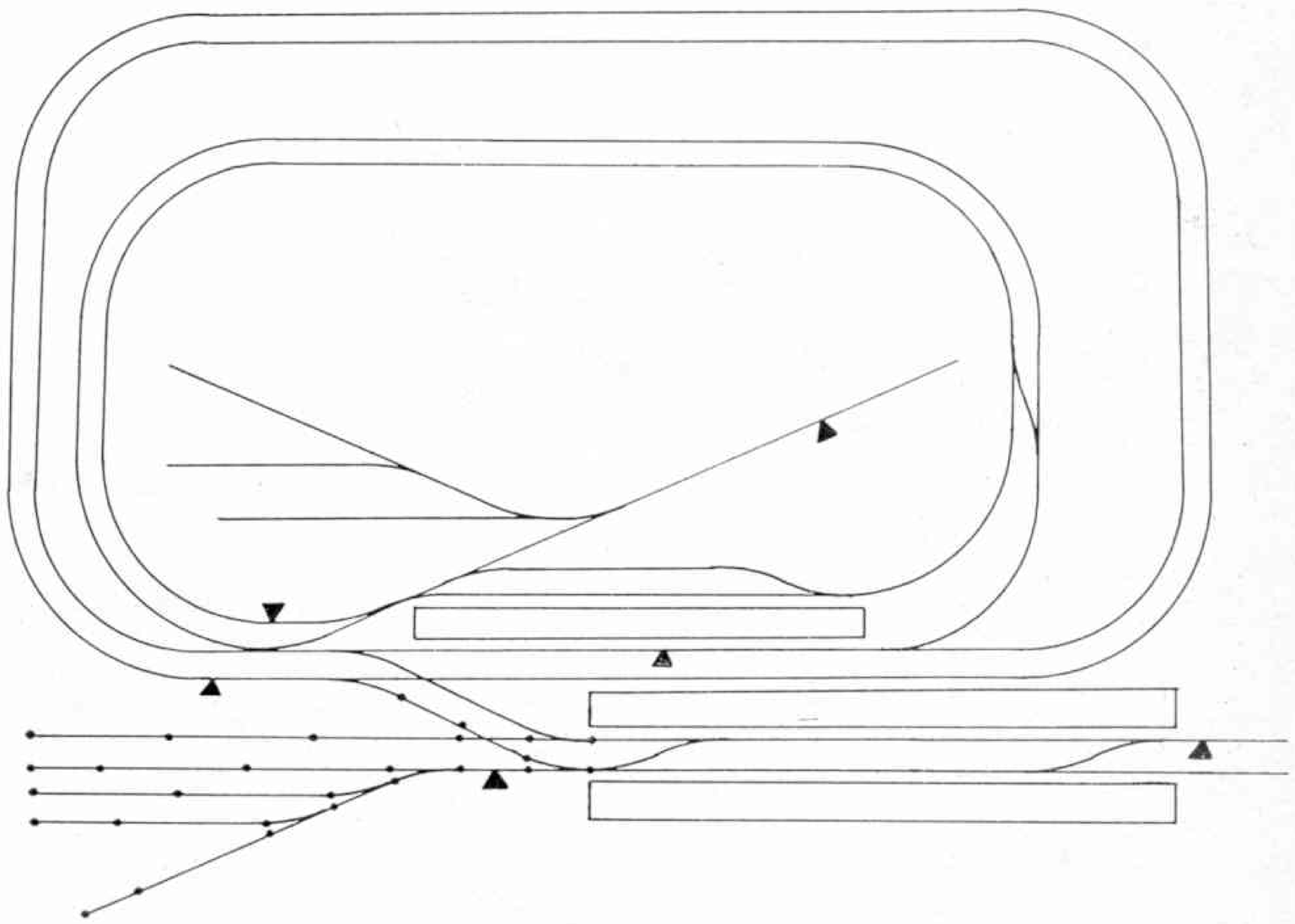


STAGE 3



STAGE 4

STAGE 5



STAGE 1

4 R. 491
1 R. 490
8 R. 483
2 R. 484
2 R. 482
15 R. 480
7 R. 481

STAGE 2

3 R. 490
1 R. 491
6 R. 485
7 R. 480
2 R. 483
7 R. 482

STAGE 3

1 R. 486
1 R. 484
3 R. 491
1 R. 490
18 R. 480
2 R. 481

STAGE 4

12 R. 480
4 R. 490
1 R. 491
1 R. 493
7 R. 481
1 R. 484
1 R. 486
3 R. 482
8 R. 485

STAGE 5

1 R. 493
4 R. 491
1 R. 490
8 R. 480
5 R. 481

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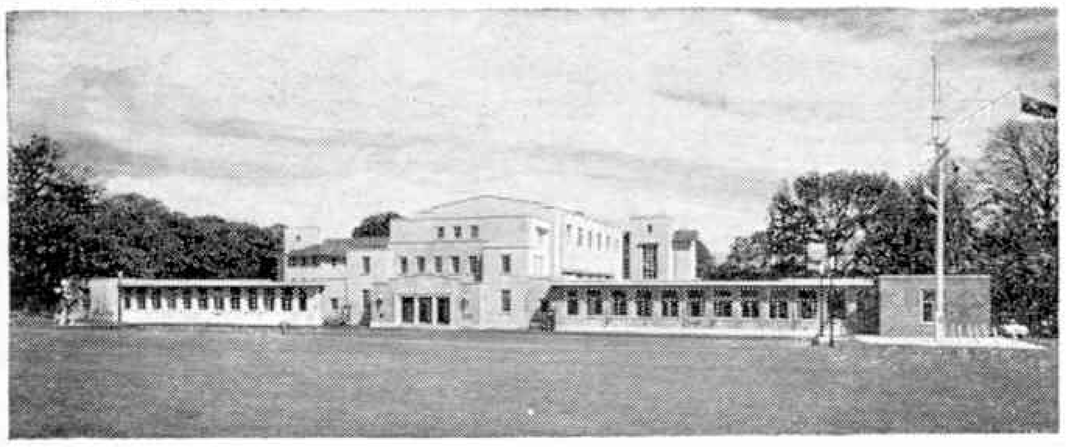

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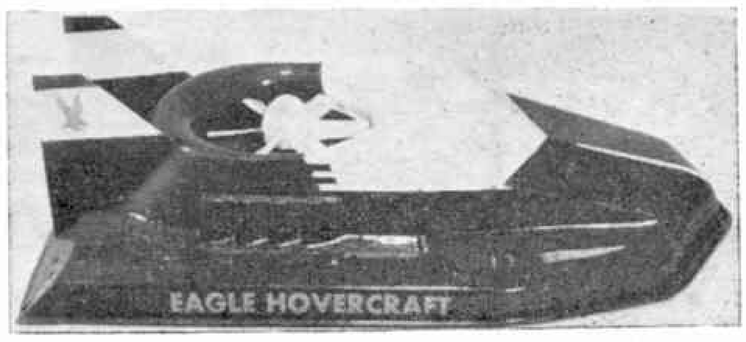

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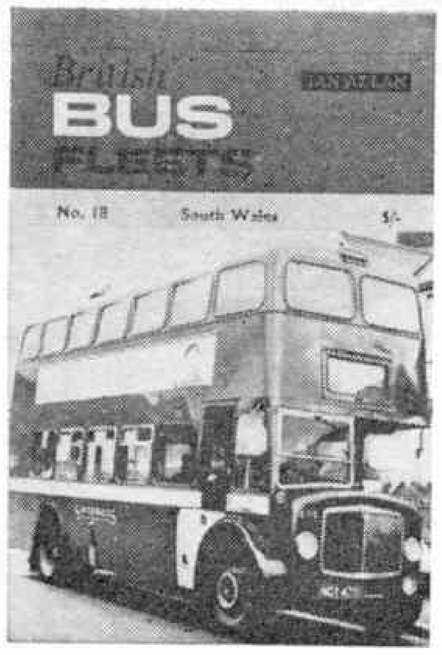
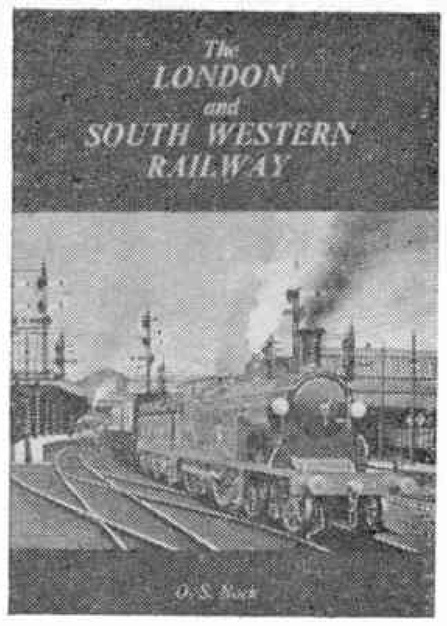




HAVE YOU SEEN ?

BRITISH BUS FLEETS
No. 18 South Wales
Published by: Ian Allan Limited, Terminal House, Shepperton, Middlesex. **Price 5s.**
72 p.p. plus 16 p.p. half-tone illustrations. 7¼ in. by 4¾ in.

A large number of the changes that have occurred to vehicles in the South Wales area during the past year have been included in this booklet. Among the developments to have taken place are the partial pruning of the Cardiff Trolley Bus service and the apparent lack of impact that rear engined buses have made outside the United Welsh and Red and White Fleets. The booklet contains much information on the South Wales area and will be of undoubted interest to all bus enthusiasts.

LOCOMOTIVE PANORAMA VOLUME 2.
by E. S. Cox
Published by: Ian Allan Limited, Terminal House, Shepperton, Middlesex. **Price 35s.**
158 p.p. plus 32 p.p. half-tone illustrations. 9¼ in. by 6 in.

The story of British Railways since Nationalisation is one that is not often told, but which is nevertheless a story of considerable interest. In Volume 2 of his autobiography, Mr. Cox tells of three successive railways administrations, the designing and building of the much maligned standard steam engines, and the final change from steam traction to diesel and electric. Mr. Cox also, in separate chapters, gives a few personal views on the steam locomotive in its final phase, and a few of his experiences on the railways of other countries visited during the period covered by the book.

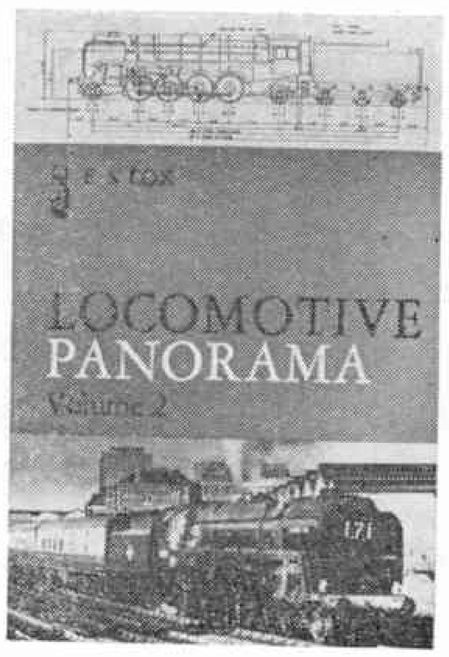
Criticism, not all of it deserved, has often been aimed at B.R. policies since its emergence as a nationalised industry under the Railway Executive, and one of the most controversial issues was undoubtedly that of the change of motive power from steam to diesel and electric. An entire chapter is devoted to this subject, and the author speaks authoritatively in his capacity as an executive officer, on the reasons for the decisions taken at the time. Many of these he does not endorse or excuse but successfully gives explanations and tells of the difficult conditions then prevailing in C.M.E. departments. The first chapter on the design and development of B.R. standard locomotives is of particular interest, and the reasons for so strong an L.M.S. influence on these designs is not ignored. The account contains many of the author's own views and experiences and this provides an authentic and interesting background. This book should be read by all those who were or are critical of B.R. and makes informative, entertaining reading.

ABC L.M.S. LOCOMOTIVES
Published by: Ian Allan Limited, Terminal House, Shepperton, Middlesex. **Price 7s. 6d.**
52 p.p. 6½ in. by 4½ in.

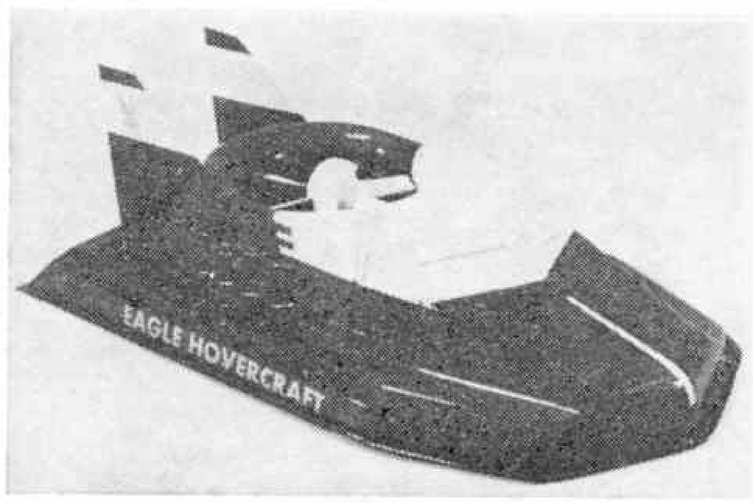
There has been a demand for some time among enthusiasts for a complete list of the locomotives owned by the former London, Midland & Scottish Railway Company. This booklet sets out such a list in a similar manner to the other ABC booklets, and shows the locomotives owned at June 30th, 1943. Illustrations and sketches of 14 classes are also included.

THE LONDON AND SOUTH WESTERN RAILWAY
by O. S. Nock
Published by: Ian Allan Limited, Terminal House, Shepperton, Middlesex. **Price 35s.**
165 p.p. plus 30 p.p. half-tone illustrations. One fold out map plus one fold out plan. Line colour plate. Eleven drawings. 9¼ in. by 6 in.

As the largest constituent of the Southern Railway Company, the London and South Western Railway was of some considerable importance, both in the South East of England, where it had an extensive system, and along the southern coast as far as Padstow. Its early history is of considerable interest, and Mr. Nock tells of the many parliamentary 'battles' during the railway mania period, with its rival, the Great Western Railway. Although originally promoted as the London and Southampton Railway, it never actually ran under that name, and its title was changed in 1839 following objections by the people of Portsmouth. Considerable difficulties were encountered with the first engineer and contractors of the line, especially in connection with the Fareham Tunnel, which was considered dangerous and eventually closed. Many interesting facts come to light in the chapters dealing with the early history of the line, and I was surprised to learn that half of the initial capital came from Lancashire. Ultimately however the L.S.W.R. became best known for its London terminus, Waterloo Station, its construction of the Southampton docks, and for its pioneering work with electric and power signalling. Its engineers included the famous Dugald Drummond, and father and son J. and W. G. Beattie, and the work of these great engineers is dealt with fully in chapters of the book. Many hitherto unpublished photographs are included, all of excellent quality, and in addition many tables and diagrams, including two fold out maps. An invaluable reference guide, written by an acknowledged expert in the field of railway history.



STOP PRESS!
NEW FROM INPACT
Following the success of the Inpact 'Magnificent Men' series of veteran aircraft, the news that a new series of kits, representing fighters of the inter-war period, is shortly to become available is of great interest to all air-minded modellers. All the aircraft in the series will be to 1/48 scale, making really big models, and detail work will be even better than the 'Veteran' series and will include individual pilots, super-detailed engines and simulated 'fabric' on all flying surfaces. First two in the range will be the Gloster Gladiator Mk. I and the Hawker Fury. Really something to look forward to!

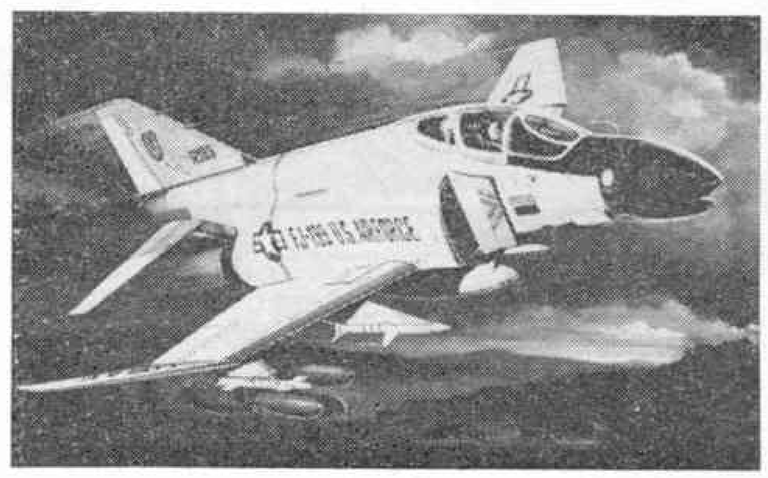


EAGLE HOVERCRAFT
The Hovercraft is certainly the most exciting development to have occurred in the realm of sea transport in recent years. The British Railways Hovercraft 'Seaspeed' has recently entered regular service, based at Southampton, and we shall soon see military versions of these fascinating craft. The successful operation of a model hovercraft is a problem which has kept people thinking for quite a while, but at last all difficulties seem to have been overcome. The Eagle Hovercraft illustrated is in kit form, with the body moulded in one piece in very light, pre-formed plastic. A very neat three volt motor draws power from two 1·5 volt 'Pencell' batteries and drives a large diameter multi-bladed fan, drawing in air through an aperture in the top of the body, and creating the cushion of air on which the craft rides. With the motor running, a slight push will send the hovercraft skimming over any perfectly flat surface. A little 'trimming' will probably be necessary to ensure a straight course. The fact that the Eagle Hovercraft is powered only by a small electric motor, and yet is able to lift its own batteries is quite an achievement. **Price 19s. 11d.** from your model shop, or from Enterprise Model Aircraft Supplies Ltd., 54 Shudehill, Manchester 4.

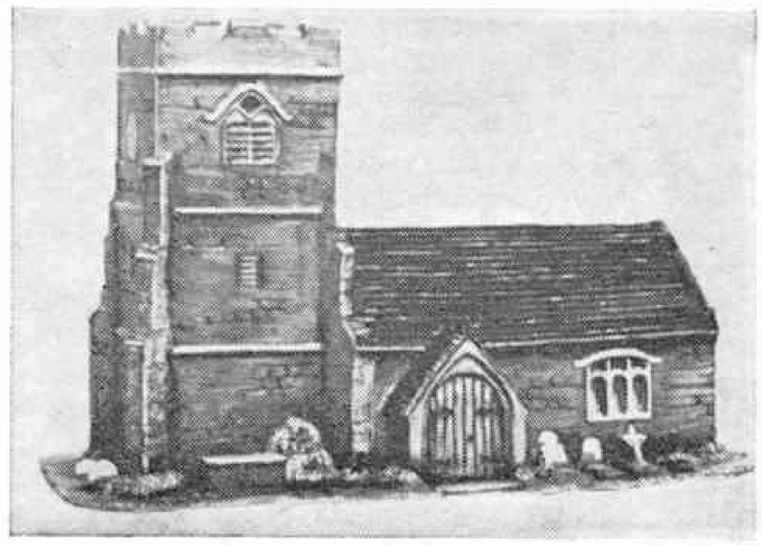
Latest release in the UPC plastic kit series from Richard Kohnstam Ltd., is the 1/50 scale McDonnell Phantom II.

This American jet carries a battery of rockets and bombs, has adjustable wing flaps and many other moving parts. It is the outstanding kit in this series of 18 models now released.

Complete with all-action crew and transfers, the attractive full colour box carries detailed assembly and painting instructions. **Price 29s. 11d.**



Latest in the Bellona range of moulded buildings and scenic accessories is the English country church. Just right for any OO scale model railway, the fine detail even includes inscriptions on the gravestones! The church is supplied unpainted, but painting such a beautifully detailed model should prove an enjoyable task. Ref. h 10. **Price 17s.**



COX'S MARVELLOUS MINIATURES

BY P. F. G. CHINN

All the precision of a first-class watch goes into the making of these modern model engines which are well known among aeromodellers for their efficiency and reliability

IN Southern California, U.S.A., there is one of the biggest model factories in the world, the L. M. Cox Manufacturing Company Inc. plant at Santa Ana. Here, six hundred people are employed in producing ready-to-operate model planes, model cars, and something like a *million* model engines every year.

Cox engines, which are made in various sizes, are all of the glow-plug type. As many of you will already know, model aeroplane engines are in two basic types: diesel, or compression-ignition, and glow-plug ignition. The diesel, easily recognized by the lever on top of its cylinder, operates on a special fuel which ignites automatically when the piston reaches the top of its stroke. The lever is for adjusting the compression-ratio so that this can be matched to starting and running conditions.

The glow-plug engine does not have a lever. Instead, it has an electrical terminal on the cylinder-head, connected to a small platinum filament inside the head which glows a bright red when energized with a suitable battery. The battery is used only for starting. Once the engine is running, it is removed and the engine continues to operate automatically like the diesel.

Both engines function on the two-stroke cycle principle like some lightweight motor-cycle, lawn-mower and outboard motorboat engines, the main difference being that the latter have ignition by sparking plugs. Early model aircraft engines also used spark-ignition. The advantage of modern model diesel or glow engines is that they do not have to carry the extra weight of a magneto or coil-and-battery system to operate a sparking plug. The absence of these extra parts also means that there is less to go wrong.

Two of the most popular engines in the Cox range are the 'Pee-Wee' and 'Babe-Bee'. The Pee-Wee is one of the smallest model engines. Including fuel tank, its length and height are a mere 1·7 in. and it weighs only four-fifths of an ounce. It has a cylinder capacity of just under 0.33 c.c. Even so, Cox make one still tinier, the Tee-Dee 010 which weighs ½ oz. and is the smallest internal-combustion engine that has ever been manufactured. Its tiny piston is less than a quarter of an inch in diameter. Five thousand Tee-Dee 010s would not even equal the cylinder capacity of one BMC Mini!

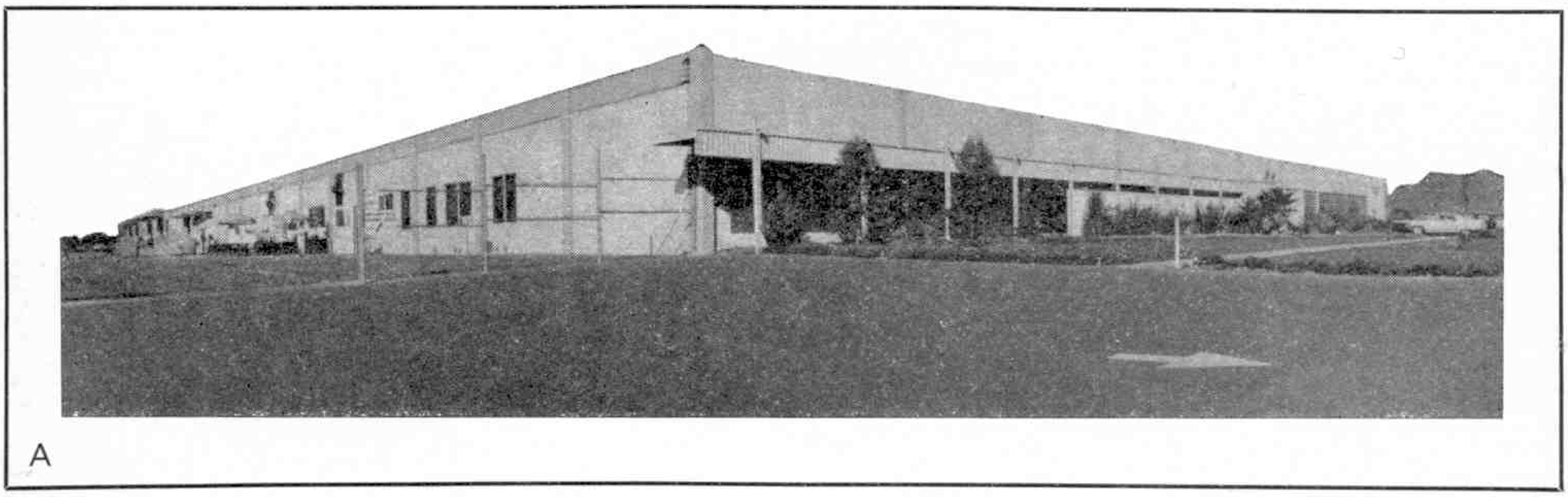
The Babe-Bee, still small by any standards, is a somewhat larger engine and, being more robust, is rather more suitable for newcomers to the hobby of power-driven model aircraft. This is the engine used in most of the Cox ready-made models and there is also a large number of model kits and magazine designs, both control-line and free-flight, to which it can be fitted.

Recently, Cox have introduced a new engine, developed from the Babe-Bee, called the Cox QZ. 'QZ' stands for 'Quiet Zone' and the intention is that this engine should be used in areas where the noise of the usual unsilenced model engine might cause annoyance to other people. The QZ is supplied complete with an exhaust muffler or silencer. This is a circular housing, fitted around the cylinder so that the exhaust gases are discharged into it, instead of directly into the open air. In the outer edge of the housing there is a slot with an adjustable slide which can be drawn over it. In this way, the quite penetrating exhaust note of these little engines is effectively subdued.

The Cox Muffler can also be fitted to the standard Babe-Bee engine and, rather than risk upsetting the neighbours or any people residing near to your flying site, it is a good idea to use one. This will reduce the Bee's power slightly, however, and if your model is on the heavy side, it might be better to choose the QZ engine instead. This has certain internal modifications so that, even with the muffler fully closed, its power is at least equal to that of the standard unsilenced Babe-Bee. The Cox Muffler, by the way, only adds a little weight to the engine—less than ¼ oz., in fact.

When model engines are manufactured in such huge numbers as those produced at the Cox factory, it is very necessary that parts should be made with great precision. Only in this way can the manufacturer be sure that every engine will start easily and run properly. Just think of the chaos that would be caused if, for example, one in every five engines was defective, and complaining customers started returning thousands of engines to the factory every week for rectification! Cox engines are therefore made by modern automated methods, and closely fitting parts, such as pistons and cylinders are finished to extremely close tolerances under temperature controlled conditions. These parts are so accurate in dimensions that the chances of a 'dud' engine slipping through are very small indeed.

This does not mean that modellers never send their engines back with the complaint that they



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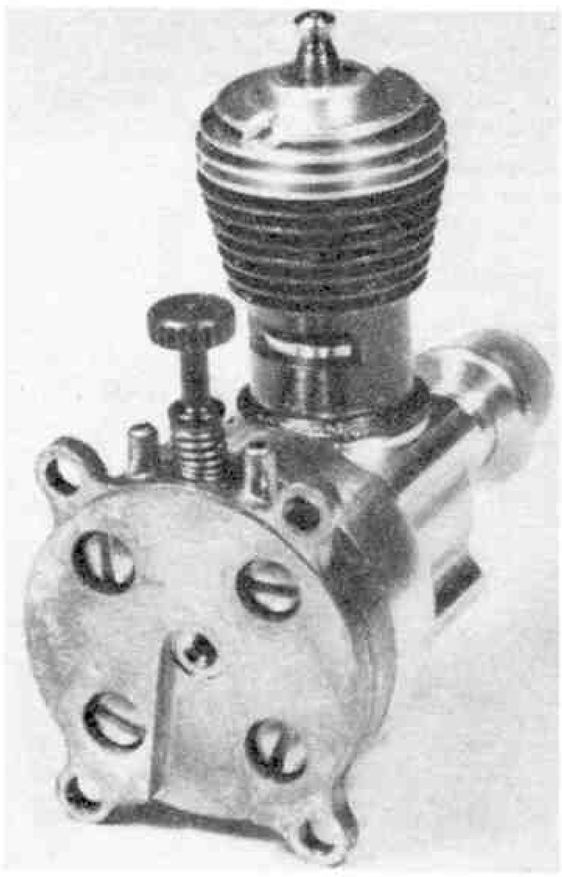

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don't work! They do, but in almost every case, the fault is with the user, not the manufacturer, so we would like to conclude this article with a few tips and a warning or two.

First, *do* read the maker's instructions. This advice probably sounds superfluous, but it is surprising how many troubles could be avoided if every purchaser studied the instructions properly.

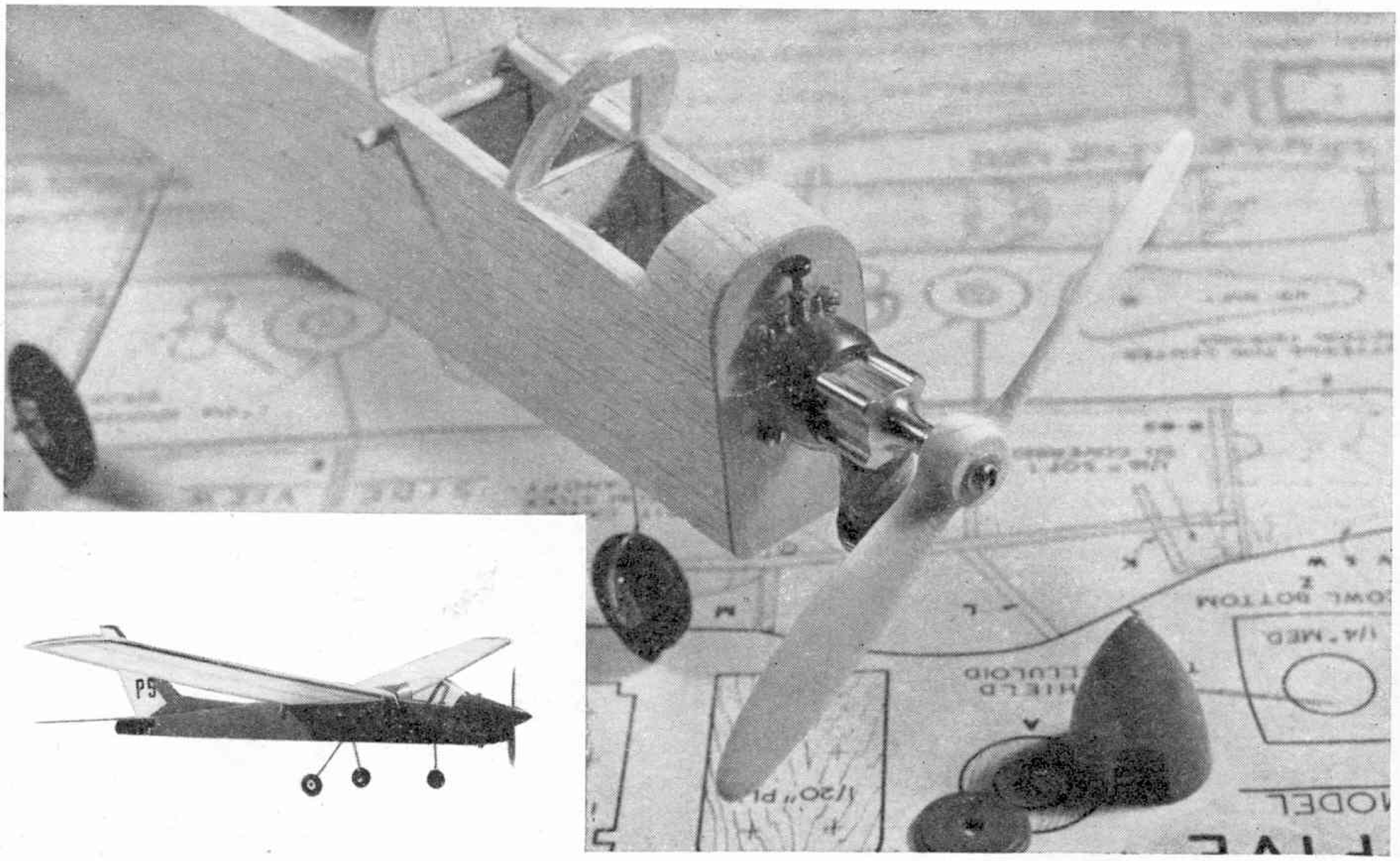
Use the correct fuel. The engine will run on many grades of fuel, but the British distributors expressly recommend Cox Thimble Drome glow fuel as some other makes have been found to cause gummy deposits or 'varnishing' in the engine. Never use diesel fuel—or petrol!

The glowplug filament is quite strong but it will burn out if excessive voltage is used. Buy an Ever-Ready AD.34, or equivalent 1½-volt cell. You should be able to see a reflected red glow through the exhaust ports. If this is not visible, carefully unscrew the glow head and check again. The filament should glow a bright red colour. If it glows only dimly, you need a new battery.

For removing and retightening the glow-head, it is advisable to have a pair of the special Cox spanners available for this purpose. One spanner is employed for turning the glowhead, while the other one holds the cylinder each side of the exhaust ports. Do not put anything *through* the exhaust ports. This may burr the inside edges of the ports which will cause the piston to seize in the bore.

Fit one of the recommended size propellers. Too large a prop will overload the engine and prevent it from developing its full power. If the prop is too big it may also result in the end of the crankshaft being broken off in a crash.

Finally, keep the engine clean. Don't use a dirty fuel container or otherwise allow foreign matter to get into the engine. Don't dismantle the engine needlessly, but if dirt and grit get into it through an inadvertent landing in loose soil, remove the four backplate screws and the cylinder-head and thoroughly rinse the component parts in petrol. Take care not to damage the delicate reed-valve. Lubricate moving parts with a little light machine-oil and carefully reassemble.



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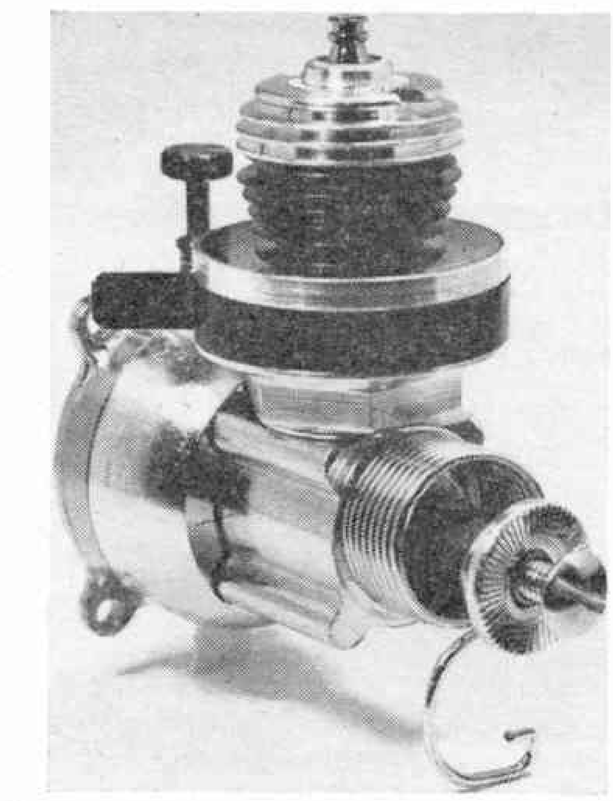


D

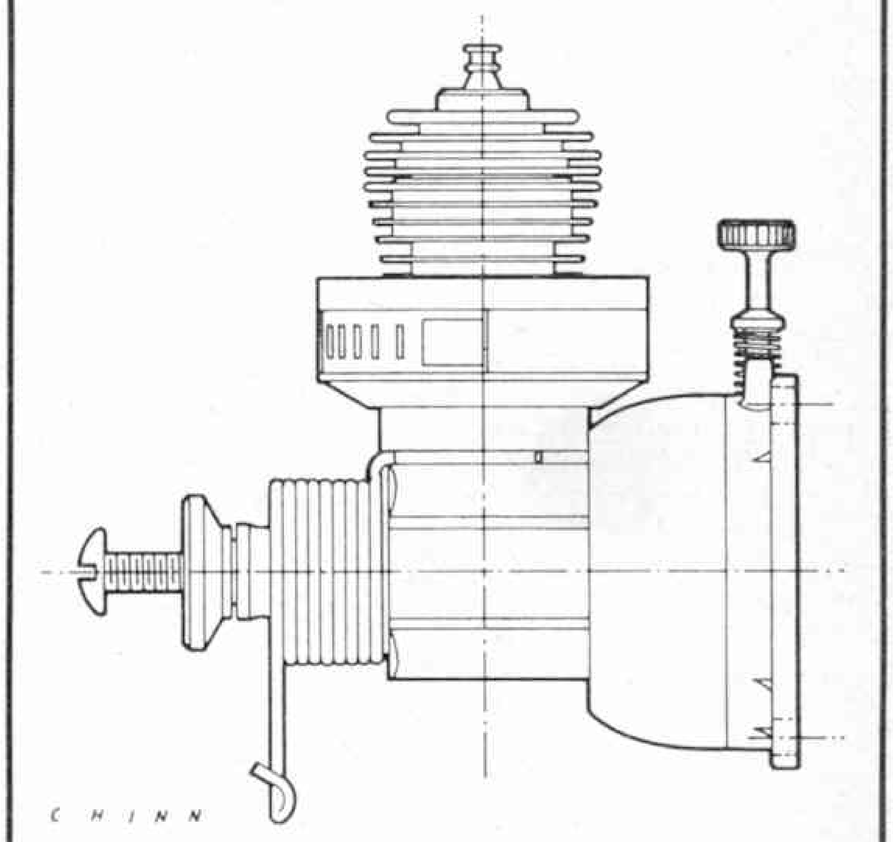
A 'Cox Centre' in Santa Ana, California, where model engines are produced at the rate of 20,000 a week

B A rear view of the 0·33 c.c. Cox 'Pee-Wee' engine, showing the integral fuel tank with four point bulkhead mounting

C A 'Pee-Wee' powered 36 in. span free-flight model showing how the engine is installed

D The 0·82 c.c. Cox 'QZ' engine with circular silencer chamber. Note starter spring, which is also available on the 'Pee-Wee'

E Full size side-view scale drawing of the Cox 'QZ' engine. External dimensions are the same as those of the popular 'Babe-Bee' model



E

AT THE TURN OF A WHEEL

WITH KEN WOOTTON

AS promised, this month I'm showing you the very fine series of American cars produced by Meccano just prior to the war, plus a few 'alterations' of my own and suggestions on what to use to make these oddities possible.

To begin with—the American cars. These six models were issued in 1939 and were sold as a set for five shillings or could be bought separately for the huge sum of tenpence! The set consisted of the following: Catalogue No. 39a, Packard Super 8 saloon. Finished in colours mid green, light green, mid brown and dark blue. Mine is the 'mid green'—a sort of Lincoln green—very unusual and difficult to describe.

No. 39b Oldsmobile 6 Sedan could be bought in light grey or dark blue. The one illustrated is blue, which has a metallic look about it and was a colour used widely by Meccano in those days and, in fact, after the war too, on such models as the loudspeaker van and the Trojan van 'Oxo', to name but two.

No. 39c is the then streamlined Lincoln Zephyr Coupé, which was painted mid-brown (as shown), light grey, putty and perhaps dark blue.

The one that has always been my special favourite is numbered 39d and is the Buick Viceroy Saloon. It's a beauty and was finished in bright green, putty, maroon (illustrated), and light grey.

No. 39e Chrysler Royal Sedan —another goodie—was enamelled bright green, mid-blue and, after the war, also in dark grey. The one I have is in the blue, and very smart it looks, too.

The last of the 39 series was No. 39f, Studebaker State Commander, another semi-streamlined job. In colours mid-grey, navy blue, dark green, mid-brown and, I think, buff.

These six Yankees were excellent models of the period, though they lack the refinements such as windows, interior fittings, springing, etc., we take for granted today.

They were constructed and assembled in the same manner as the set of sports cars described earlier, e.g. one-piece body shell, base-plate, axles and wheels. As will be seen from the photographs, the casting detail is excellent on all of them, and the finish also. Anyway, they must have something, for every collector I've come into contact with (and I've met a good number) just love all six. This is unusual for all enthusiasts' tastes vary — some liking certain models and disliking others—so when Meccano issued these, they produced six winners!

As you can see, I had spare a rather tatty Buick and Packard, which I decided to 'chop', for want of a better word, into something a little different. I'd never attempted anything like this before, usually working in plastic or wood, so the end results aren't awfully brilliant.

Taking the Buick first, and having visions of a convertible job, as seen on the local roads, I took up my rusty hacksaw and proceeded to lop off the roof. Before I'd made much of a dent, my puny wrist was aching! These Dinkys are made of some super tough alloy which takes quite an effort to cut through — all the same, if you're thinking of having a go, follow me!

Saw through the roof and the front first, being careful not to go too close to the front of the car. (Any excess metal can be filed down later when forming the windscreen.) Saw steadily and straight until you're through, when you can transfer your attentions and saw to the rear window pillars. When these are through, the rest (door pillars) is easy.

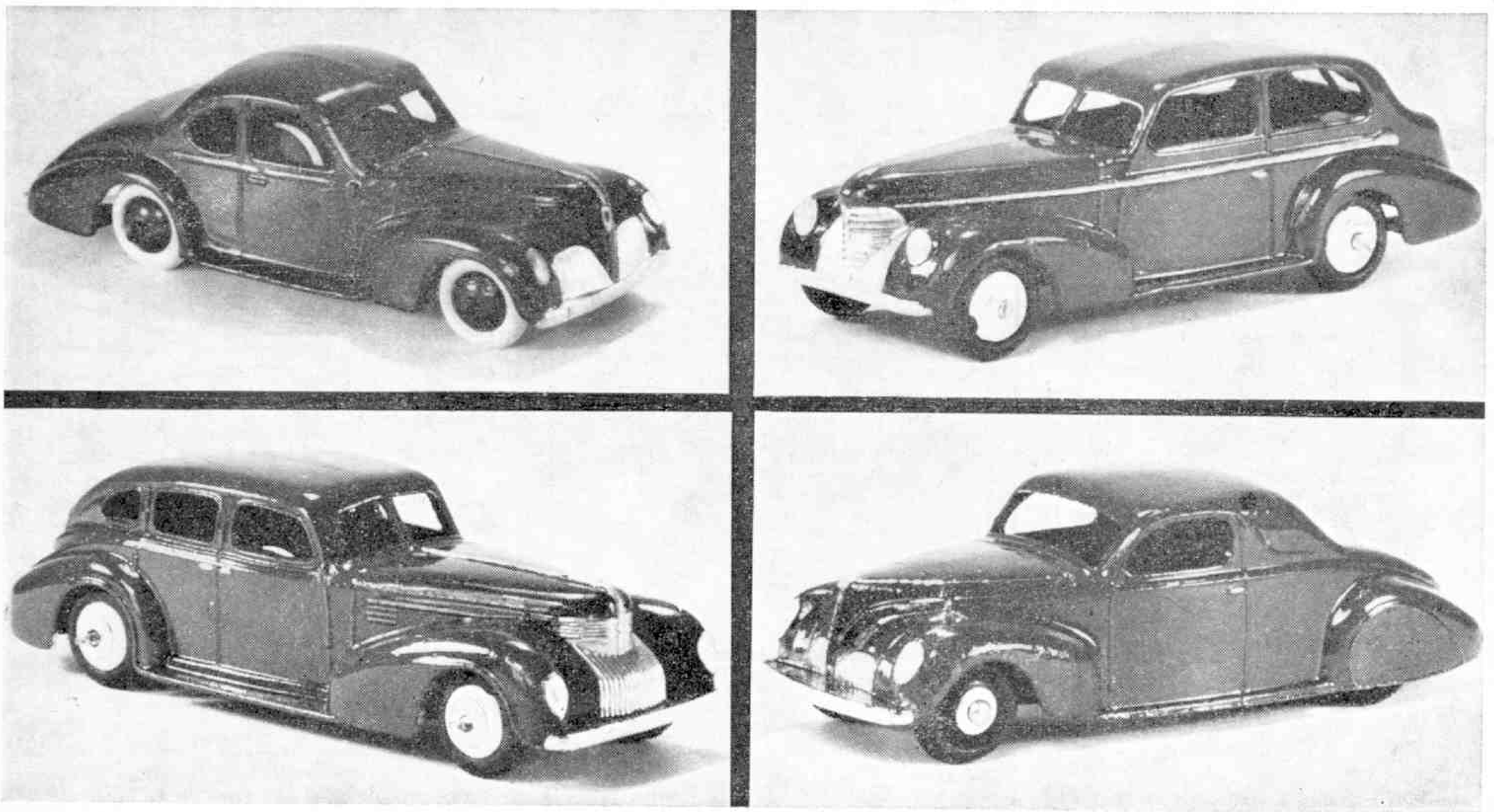
Proceed to clean up all rough edges and create the windscreen with a needle file of a type which suits you best. Now is a good time to clean off all the old and worn paint. This can be 'lifted off' with a substance such as 'Nitro Mors', which is painted on. Within a few seconds the paint bubbles and can then be easily removed.

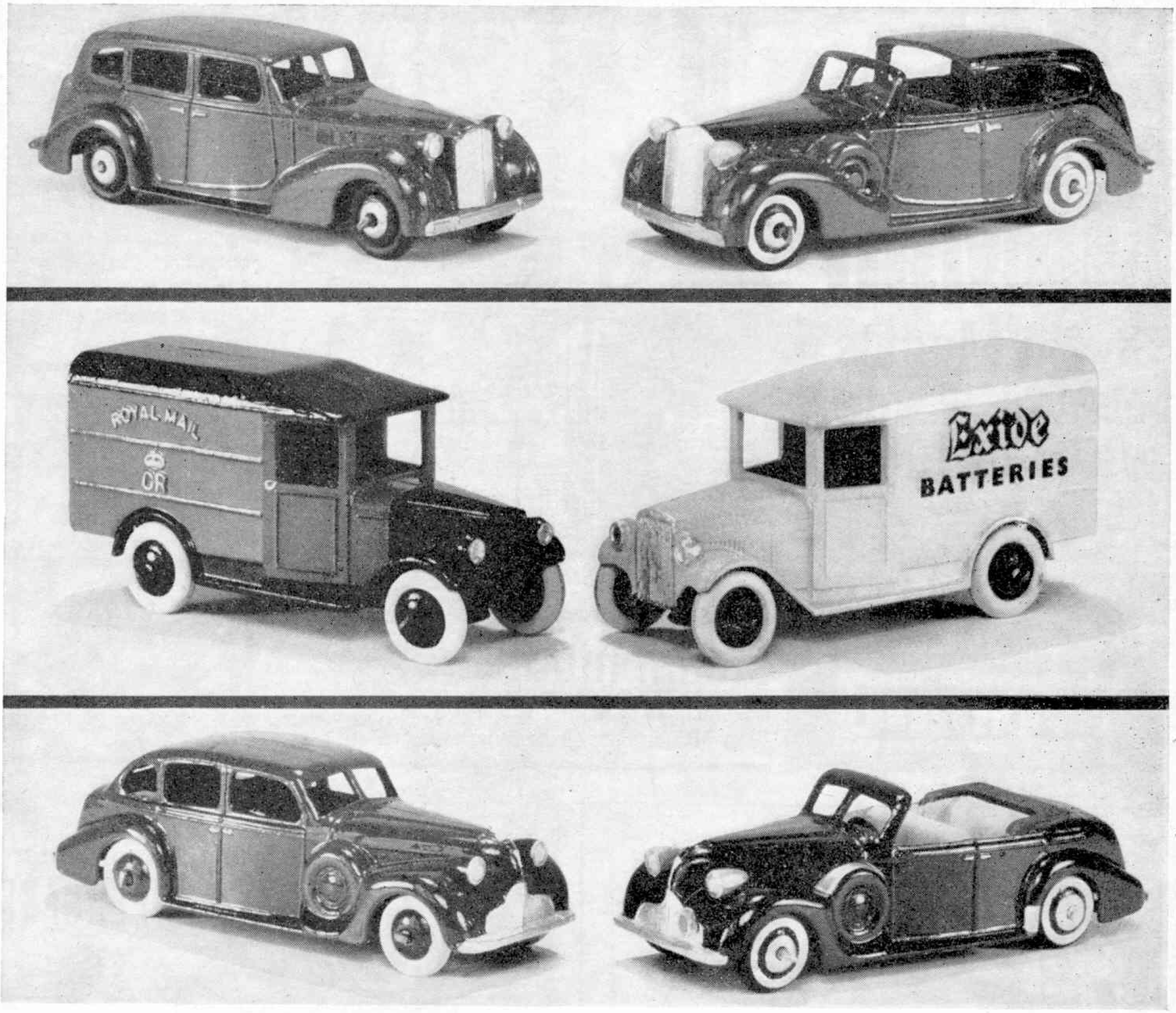
You're now faced with the problem of whether to make your own seats or use some out of another Dinky tourer. If you choose the former, it's not difficult to produce a flat type of bench seat, as would be in the real Buick of the period, and can be fashioned in Balsa wood. For my model I chose the latter, which involved the old hacksaw again.

Hunting around in my spares box for something suitably tatty, I came across an Alvis Sports Tourer. This suited my purpose admirably and the seats, now installed, look very well.

Of course, I had to cut the Alvis up terribly until it was just a piece of twisted metal. The seats, also, were too wide and had to be 'trimmed' with the saw. The dashboard was made with Loy's Plastic Metal, which is easy to work and comes conveniently in a tube. The steering wheel was from the Alvis.

Four great Americans from Meccano in 1939. Top left: No. 39f Studebaker State Commander. Right: No. 39b Oldsmobile 6 Sedan. Lower left: the Chrysler Royal was No. 39e, and faithfully portrayed the unusual frontal styling of the prototype. Right: the Lincoln Zephyr was one of the first mass-produced cars to boast a V12 engine. This exciting looking coupé was Dinky Toys No. 39c





Top: 'Ask the Man who Owns One' was Packard's pre-war sales slogan. but if you can't manage the real thing, Dinky Toys No. 39a Packard Super 8 Sedan is at least a consolation! The sleek Coupe de Ville on the right was 'chopped' from a standard sedan. Centre: No. 34b Royal Mail Van and repainted 'Exide' version. An easy but satisfying conversion. Lower: the impressive Buick Viceroy was No. 39d in the Dinky catalogue. Judicious cutting produced the tourer version on the right

When all rough edges had been filed smooth, etc., I gave the Buick a good shampoo with ordinary soap/water and an old toothbrush. It then had about three coats of Humbrol dark blue with pale blue seats, simulated wood dash and silver trim. The white walls are from Corgi's packets of stick-on wheel hubs with the centre hub removed. This isn't easy and I don't recommend it unless you are *very* careful; it looks messy and it takes an age with the paper being sticky backed and all the time threatening to tear and crease.

The Packard (my second attempt) Town Sedan or Coupé de Ville, was achieved using the same tools already described. I just chopped out a part of the roof level with the first middle door pillar and at the front, producing a windscreen and open front compartment for driver or chauffeur. The front seats are from the Armstrong Siddeley Coupé, which also needed trimming to fit. The steering wheel and dashboard are as fitted in the Buick. Proceeding exactly as before, we ended with painting the Packard body cherry red and black with dark brown upholstery. It all seems a little lumpy now, so one day it will be stripped down, rear seating installed and a repaint added.

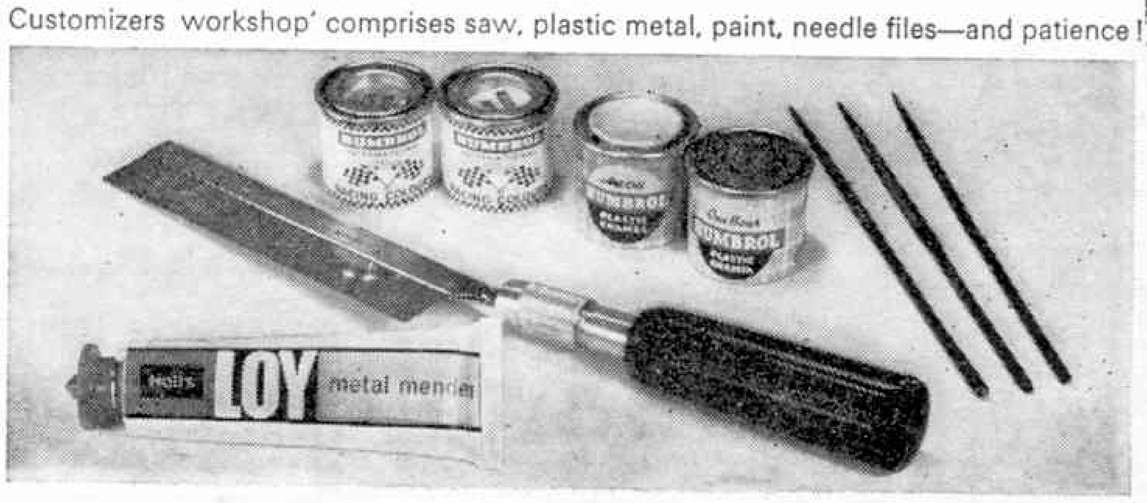
The last but one photograph shows a really easy and lazy conversion—the 34b Royal Mail Van into a delivery van. All I did here was to remove all lettering and Crown detail from the two sides. Completely repaint in yellow and slap on some 'Exide' transfers. This was done because I have a soft spot for this old van and wanted an excuse to have another in the collection.

That's about all there is for this month. The tools mentioned suit me admirably, as does the Humbrol paint, though some of you will perhaps prefer other ways and means. I did purchase a mini-drill, which I find useful for drilling and grinding, and this, with the others, forms my full 'workshop'.

Humbrol paint I find excellent, in most cases, having a brilliant gloss (brush painted), but some of the colours lose their gloss very quickly. This has happened with the yellow on the 'Exide' van, and also with black, to name only two. I always stir thoroughly and replace with new when the tin is still two-thirds full. Can we have some of the colours improved, please, Humbrol?

Next month I'm taking a trip with Dr. Who in his time machine. Anyone coming for the ride?

Customizers workshop' comprises saw, plastic metal, paint, needle files—and patience!



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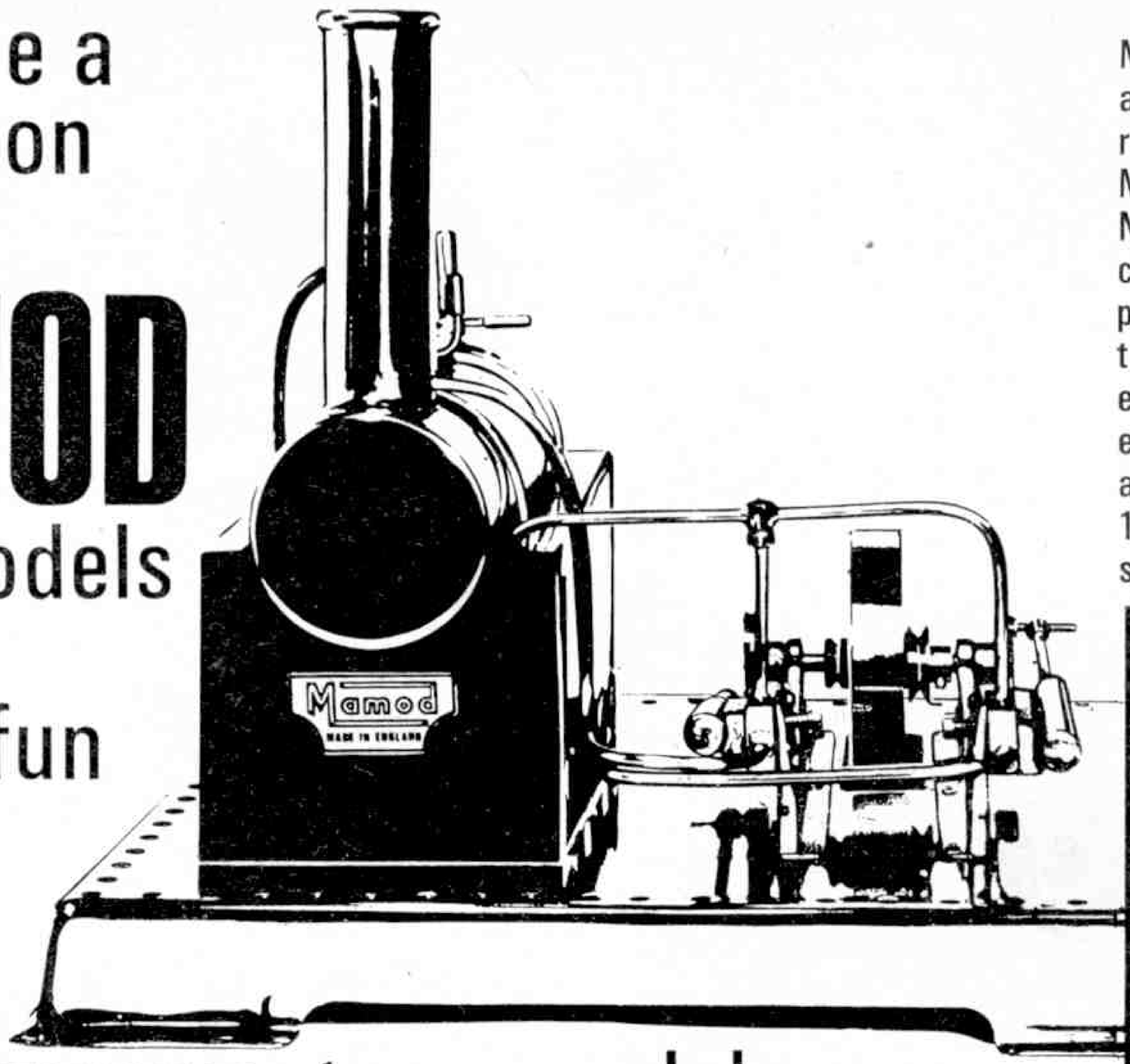

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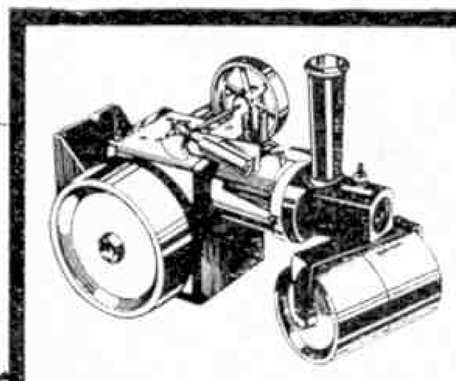

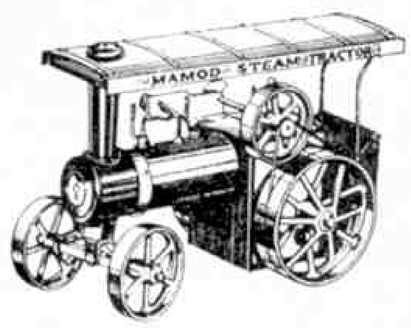

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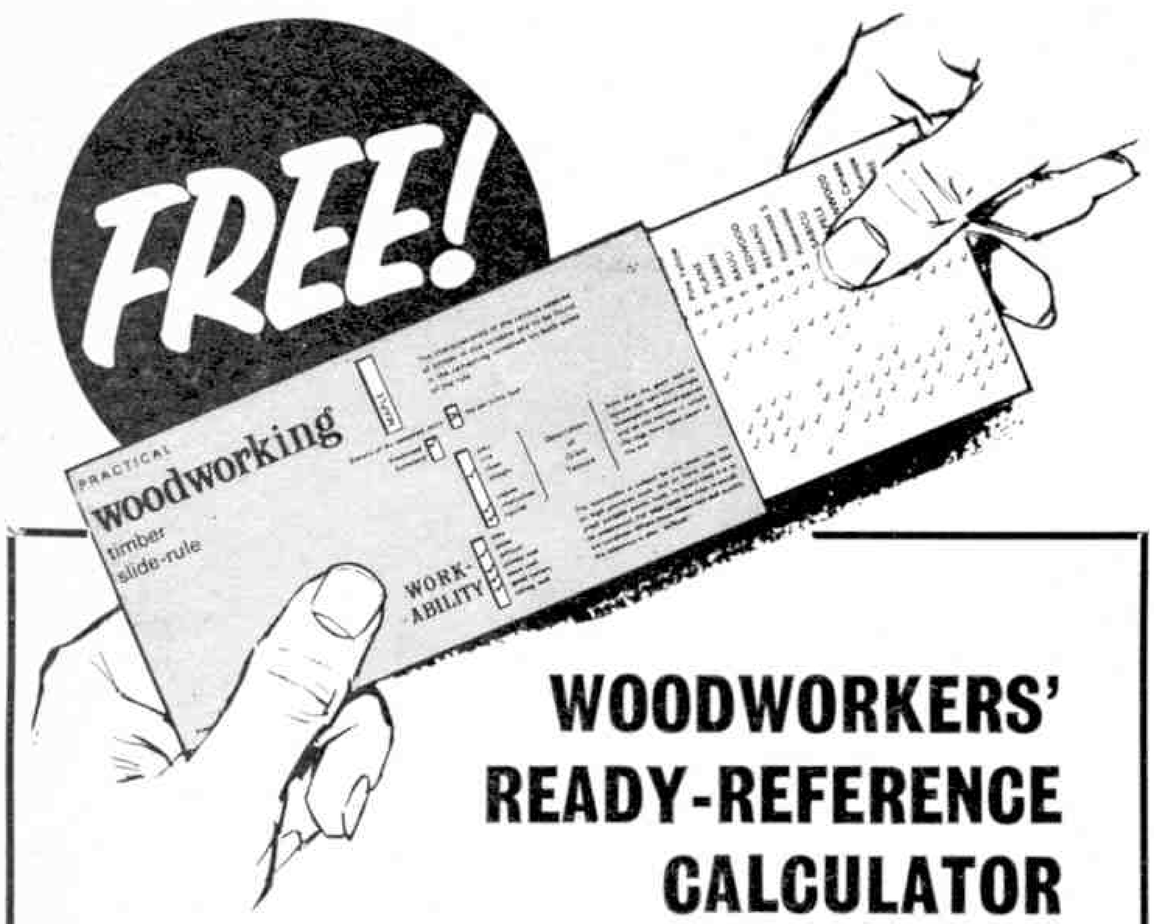

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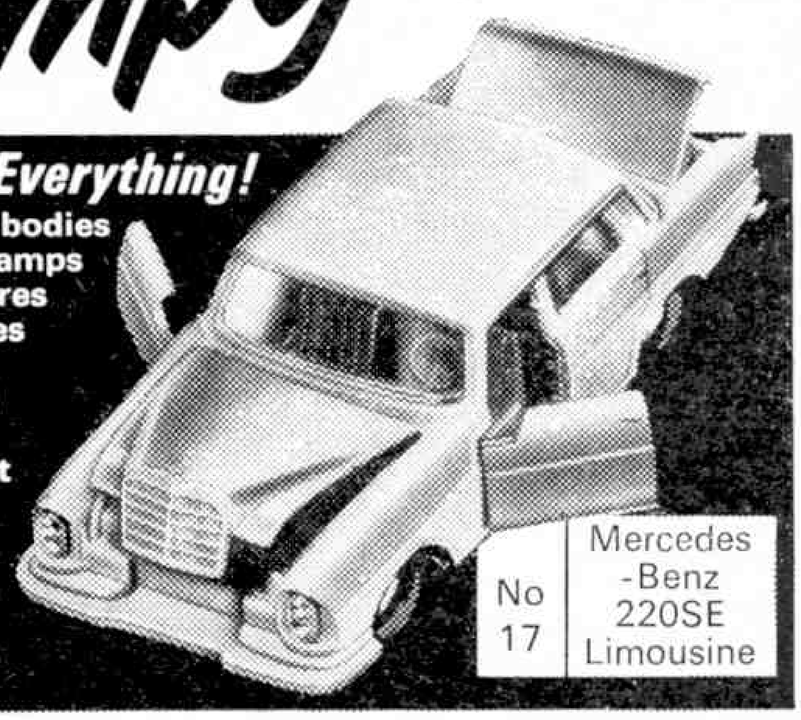

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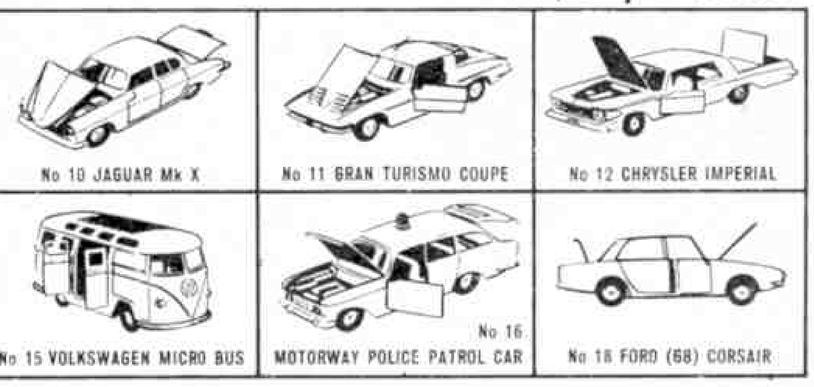

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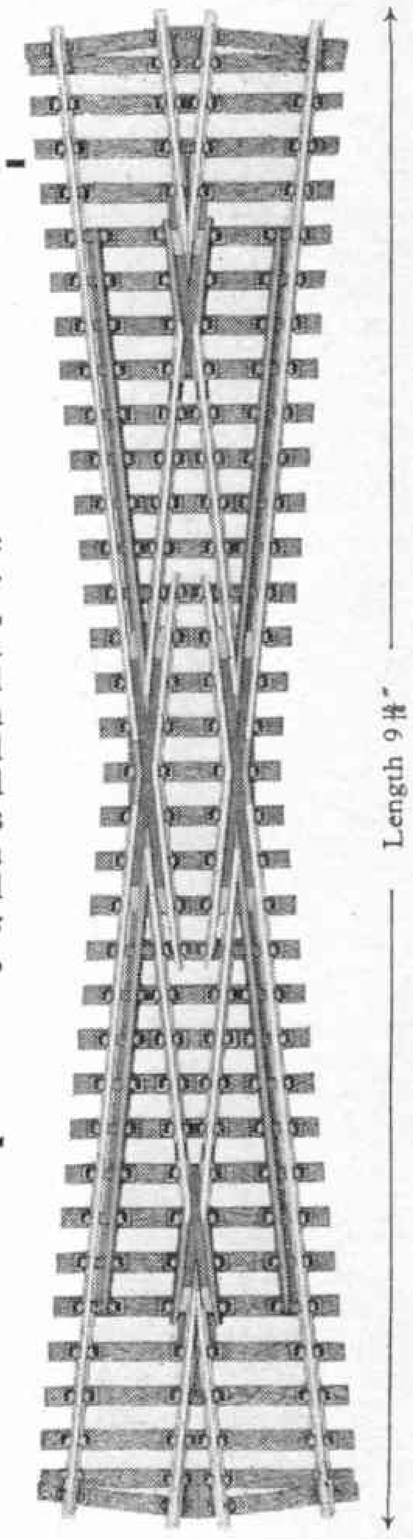

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SCRATCH BUILDING

PART 2 BY GODFREY ARNOLD

IN the last article in this series I gave a broad outline of some of the aspects of scratch building and pointed out that the main object is to win races. This month I will tell you how to build a car that will not be outclassed at club meetings and will give you a standard at which to aim that of your driving.

Before starting, make sure that you have all the parts listed, plus soldering iron, plastic cement and other tools and read the article through a couple of times, referring to the parts listed, to make sure that you understand what each one is.

In club racing, cars have to be $\frac{1}{32}$ scale with a tolerance of plus or minus $\frac{1}{16}$ in. on track, wheelbase and overall tyre sizes. The car chosen for this article, the Ferrari 250P, has a full-size wheelbase of 7 ft. 10 in., which scales down to $2\frac{15}{16}$ in. The MRRC chassis used here has a wheelbase of 3 in., so that, being $\frac{1}{16}$ in. too long is just within the $\frac{1}{16}$ in. tolerance allowed and so can be used as it is with no modification.

The first step in the construction is to fix the pinion on to the armature shaft. The magnet end of the motor is held against something firm and the pinion gently hammered into place. With other makes of gear it may be necessary to solder it into position but care must then be taken not to get solder between the teeth.

The next step is to fix the dummy exhaust pipes which form the rear mounting. Clamp lead, or some other non-ferrous metal around the magnet to prevent it getting too hot, clean the outsides of the U-bracket and the ends of the exhausts with a file, then solder into position, using as hot an iron as possible. It is advantageous to put the axle through the bearing holes whilst doing this to ensure that the exhausts do not foul it. Although $\frac{1}{16}$ in. diameter brass rod was used in the example, small brass tube with silver steel pushed down through it is better as it is more rigid.

Having fixed the exhausts the front end of the chassis can be mounted. Remove any flash from the steering unit so that it is a snug fit between the mounting lugs on the front end of the motor and fix it in place with an 8 B.A. nut and bolt. The photographs show which is the correct way up.

If the Supershells wheels are fitted as supplied, not only will the track be wider than is permissible but the front tyres will foul the body on lock. It is necessary, therefore, to file about $\frac{1}{32}$ in. off the back of the hubs to narrow the track by $\frac{1}{16}$ in. The wheels, with spoke inserts in place, can then be put on to the stub axles, an 8 B.A. washer put on the outside to make up for the part filed off the back, and retained by the pins and washers supplied. To ensure that the wheels do not come off at some inopportune time, gently squeeze the pins with a pair of pliers to flatten them slightly before inserting them into the holes in the axle and gently hammering them home. The wheels should now revolve freely and any binding should be put right at this stage.

The rear axle can now be mounted and the first step here is to file down one of the brass retaining collars on both sides so that it does not prevent the gears from meshing properly. Now mount the threaded axle, the collars and the gear, first fixing the collars so that the axle is central and runs freely. There should be only a few thousandths of an inch end float on the axle and an easy way to ensure this is to put a piece of paper about the thickness of this page between one collar and the bracket whilst tightening it. When both the collars are tightened the paper can be removed and the axle should turn freely with little end-to-end movement. Paper can also be used for ensuring correct mesh of the gears by putting a piece between the two and sliding the contrate hard up to the pinion, and once the contrate has been tightened the gears can be turned to remove the paper. The whole assembly should now be run-in for 15-20 minutes with a power supply of 4-8 volts. If you have a variable output unit this is ideal, but do not use a hand controller as this may burn out. Dry batteries are ideal, four U2s in series used until they go flat may seem an extravagant way of running in a motor, but the increased life of the motor and gears makes it worth while. During this period the lead mentioned earlier should be kept on the magnet and a little oil, preferably Molyslip G, may be applied sparingly to the axle bearings and gears. If any finds its way on to the commutator remove it at once!

Once the motor is run-in the rear wheels may be screwed on, with the lock-nuts on the inside, to give a track to the centres of the wheels of $1\frac{5}{8}$ in. I always apply a little plastic cement when doing this as it helps to stop the wheels from unscrewing when they are not supposed to, yet allows easy removal.

The flash can now be cut from the tyres and they can be fitted to the wheels. Ensure that they are sitting squarely when viewed from above and that they are concentric with the hubs. All four tyres should now touch the ground. If they do not, gently heat the connecting part of the steering and twist it so that the chassis is square.

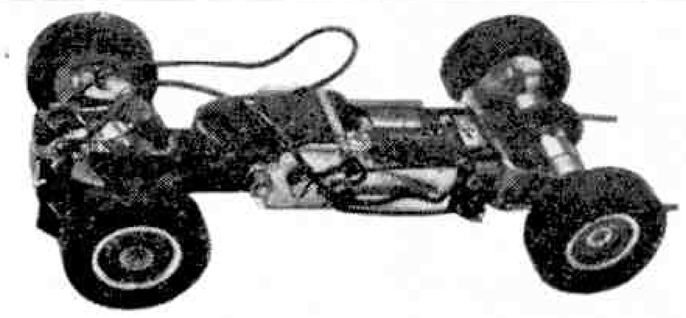
The MRRC steering arm is a little prone to bending more than it should do where it is cranked, so clean up the insides of the bends and run a little solder in there, filing it smooth afterwards. If this fouls the axle beam the nylon may be trimmed to allow for full lock. Mount the slot guide on the arm and cut the protruding metal off just proud of the upper part of the guide. Now push the braids right up through the holes, leaving just enough sticking out of the bottom to catch hold of. Open out the braid with a small nail, strip about $\frac{1}{8}$ in. off the ends of the pieces of flex and poke these down through the braids whereupon, if the braids are pulled back down through the guide the whole lot will be held firmly together. After first checking the direction of rotation of the wheels, the other ends of the flex can be soldered to the motor brushes. *Temporarily* remove the blue insulating sleeve before doing this as it may melt and cause a short later on. Cut the braids off flush with the trailing end of the guide and separate them out for the last quarter of an inch to get a good contact.

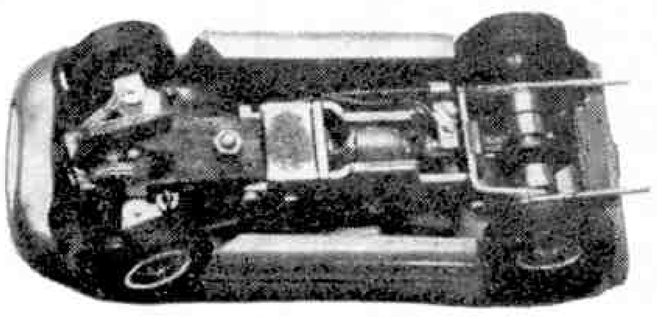
The chassis is now ready for track testing and it is as well to do this before mounting the body. Do not worry too much if it slides around a lot to start with as this is usual with new tyres, but there should be no 'bounce'. If there is it can usually be traced to tyres 'out of round', slack in the front wheel bearings or stub axles or stiff steering. Other than this no troubles should be encountered.

Once the chassis performs reasonably well it can be mounted in the body. First, stick the underpan on to the top of the body, then cut most of it away with a hacksaw, as in the photograph. Offer the chassis up to it and cut away, with a modelling knife, just enough around the wheel arches to allow the wheels tc turn freely, checking the front ones throughout the whole range of steering movement. File out two slots at the rear in which the dummy exhausts can rest.

Now take a piece of packing, such as balsa wood, of the right thickness to get the chassis to rest at the correct 'depth' in the body. Clamp the two together, if necessary chocking the chassis sideways, and drill right down through the body and the chassis just ahead of the instrument panel. Separate the two, file down the head of a 1 in. 6 B.A. bolt and put this down through the hole in the body, put a little plastic cement in the hole, put a nut on the other end and do it up tight. Use a nut and washers to obtain a seat for the chassis which can now be secured by a single nut from below. Check again that the wheels are not fouling the body and track test again. My model needed a piece of lead $\frac{1}{8}$ in. thick and $\frac{1}{2}$ in. square right in the tail and two $\frac{1}{4}$ in. by $\frac{1}{2}$ in. strips at the rear of the sills, stuck with an impact adhesive, to improve the roadholding and now goes very well indeed.

Next month I will tell you how to finish the body to give a long lasting, good appearance.





SUPERSHELLS
1 Ferrari 250P body kit.
1 pair 23 mm. Doughnut tyres*
1 pair 21 mm. wide tyres*
1 pair threaded wheels with $1\frac{3}{4}$" threaded axle.
1 Ace Power Drive gear set.
1 set spoked inserts.

*Choice of soft or hard tyres depends upon type of track to be raced on. Club circuits generally need hard tyres and home circuits soft.

M.R.R.C.
1 three-pole motor with U-bracket. (The five-pole motor is not quite as fast but is easier to control).
1 $\frac{1}{32}$ scale steering unit.
1 slot guide with braids.
1 pair brass axle locating collars.
1 8 B.A. fixing bolt.

VARIOUS
2 4in. lengths of flex such as that supplied by Tri-ang for railways.
2 $1\frac{1}{8}$ in. lengths of brass rod or tubing.
1 1 in. 6 B.A. bolt and nuts.
6 and 8 B.A. washers.

AURORA BATTERY OPERATED RACING SET

ALTHOUGH a small proportion of the more dedicated types indulge in slot-racing more for self-satisfaction than for enjoyment, the majority of us do it for fun. Club racing on large circuits demands a great deal of concentration and skill but, generally speaking, there is more fun to be had racing on home layouts with friends and family. Unfortunately, few of us have the space to get an interesting layout into the home without the lady of the house becoming a trifle annoyed at the complete living room being taken over by a racing circuit, and one way to overcome this problem is to use one of the very small scales, such as HO, and to this end the Aurora set that I have been trying out is ideal and can well be recommended, even if you have no space problem.

The diminutive cars seem to be going fast before they even move on the track, being very neat and capturing the spirit of the originals better than most models, even those in the 'super-detailed' 1/24th scale. On removing the body a chassis is exposed which seems to bear a marked resemblance to a watch, with beautifully cut brass spur gears and a pinion giving a final ratio of 2·75:1. The armature is enormous, having a diameter of $\frac{11}{16}$ in. which, when compared to the $\frac{1}{2}$ in. of most model cars, explains the good acceleration of these. I particularly approve of the pick-ups and brushes as there is positive contact between the two and the pick-ups are cleverly sprung to provide efficient contact with the minimum tendency to lift the car off the track. At no time did I have any trouble with lack of contact, even after the track had been left assembled and not used for a week.

It makes a pleasant change to come across a manufacturer that acknowledges that guide pins can wear out rapidly, and not only do Aurora make them easy to change but three spare ones are supplied with the set. The cars, as they arrive, have guides front and rear but, having plenty of power, can still be made to leave the track. The rear pin can be removed to make things more difficult, but I found that the best racing resulted when the front one was turned around so that it faced forward and the rear one was removed.

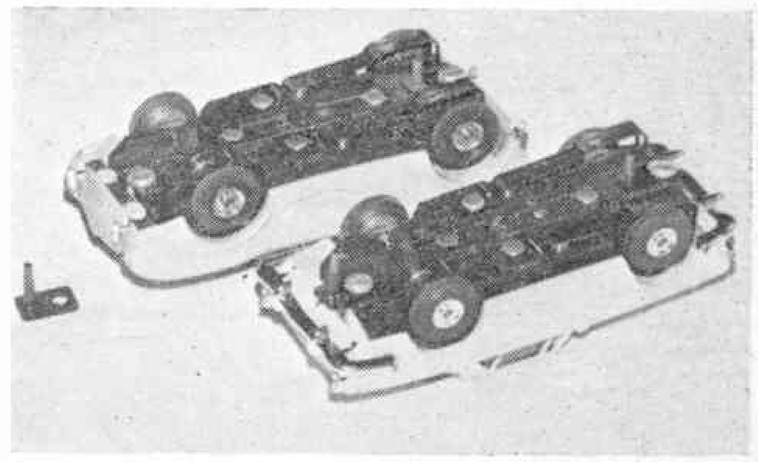
The same basic chassis was used on the cars that I tried but this provides for variations in wheelbase for different cars, the two that I tried being the Maserati and the Cobra, the bodies of which were excellent in detail and very tough indeed. Several times they were driven over the edge of my workbench and on to the concrete floor below, but seemed to bear no traces of damage after this.

It is no good, of course, having good cars if the track does not come up to the same standard, but the Aurora set would be difficult to fault in this respect (or any other come to that). I have a pet argument that, generally speaking, the reliability of electrical continuity is proportional to the effort required to assemble a track. The Aurora track is not difficult to assemble for all the pieces go together in a precise manner with no 'wiggling' needed, but quite a bit of 'push' has to be exerted to snap in the nylon joiners. Once they are in, however, the joint is one of the best that I have seen and is unobtrusive as the joiners blend in with the dotted lines in the road, so completing a very realistic surface. The bridge supports are reminiscent of the overhead part of the M4 motorway, both in appearance and solidarity. This is a set that anyone would want to add to and the box that it comes in will take quite a lot of extra track, so saving the inconvenience of having it scattered around in separate containers.

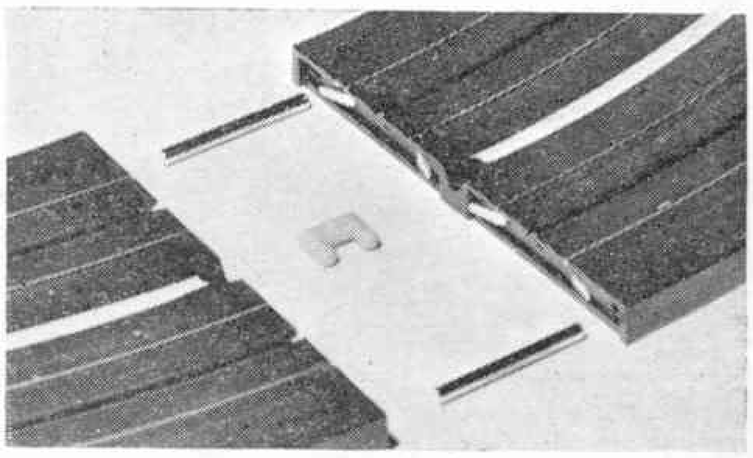
The set that I tried was supplied with on/off type hand controllers which, although not suitable for use on a roadway type of layout (special controllers are available for this purpose), are ideal for racing in that they put a premium on skill. The power pack, as supplied, consists of a case to hold eight U2 type batteries with a series of slots in the lid into which a brass tongue may be fitted to give various voltages depending upon how fast one wants the cars to go. It is advisable to use the lowest position until one is familiar with the set then graduate through to full power. A battery pack, of course, means a much lower initial outlay and running costs should be low because the life of the batteries is much longer than one would expect, as the motors consume only a miserly twentieth of an amp when in use in spite of their terrific performance. Another advantage of this power supply is that the layout is completely portable and it can be taken anywhere, regardless of the availability of mains supply. There is no reason why it should not be taken on picnics (mind you do not run over any ants) to the beach or even on holiday with you. I also found out that it was possible to get two people and the layout into the back of a Mini-van, so that it could come in useful for whiling away the hours spent in traffic queues!

The range of extra track available is very good indeed, whether one wants to use the system as a roadway or for racing and includes straights of various lengths, different bends, single lane roads, turn-offs, inter-sections, cross-overs, starter tracks and lap counters, in fact just about everything that one could want. The instruction book includes a full list of the available spares together with very clear instructions, including converting to mains power with a power pack, maintenance procedure and no less than 29 suggested alternative layouts.

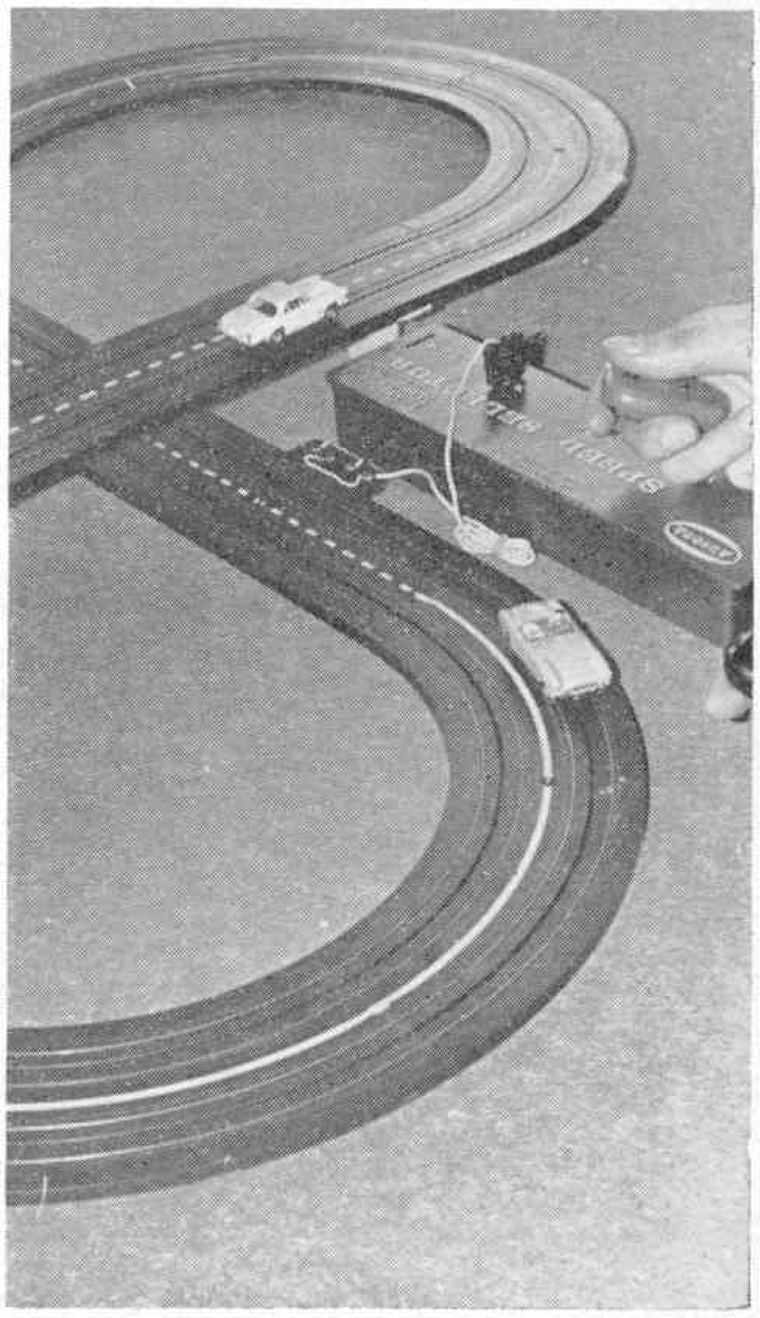
Altogether the Aurora Racing Set is ideal for almost anyone who wants model motor racing, whether or not he has a space problem. It provides endless fun and enormous scope for lovers of realism, for the range of buildings and other accessories available in this scale is, of course, enormous. I can envisage, and wish that I had time to build, a racing circuit served by a railway and road system, where saloon and sports cars could be driven to meetings, breakdown trucks could recover crashed cars. . . . **Godfrey Arnold**



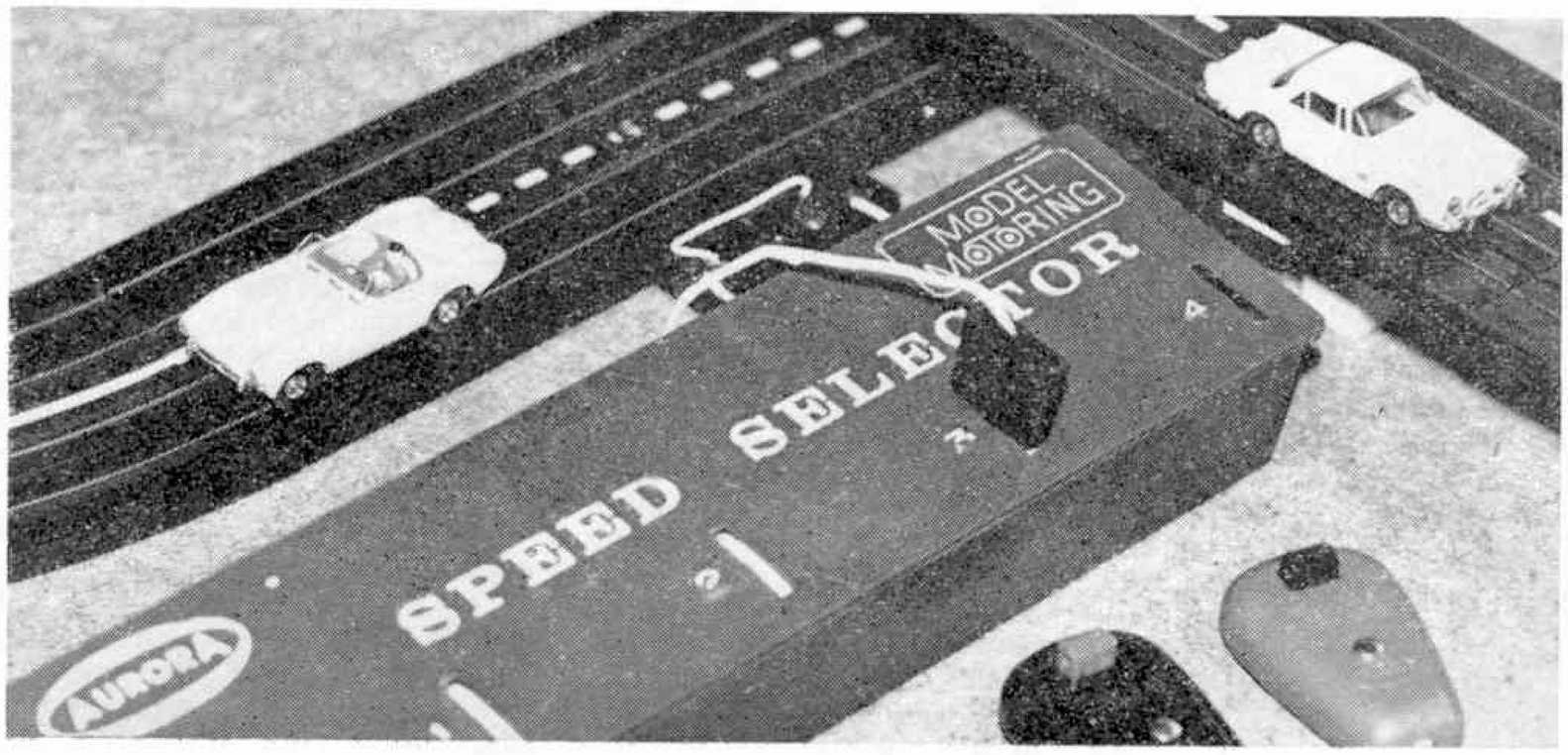
Underside view of the Maserati and Cobra, showing the very neat chassis. The upper car has had the rear guide pin removed



Above: Aurora track jointing provides excellent electrical contact. The 'snap in' nylon joiner blends with the line on the road. Below: general view of figure eight layout with power pack and hand controller

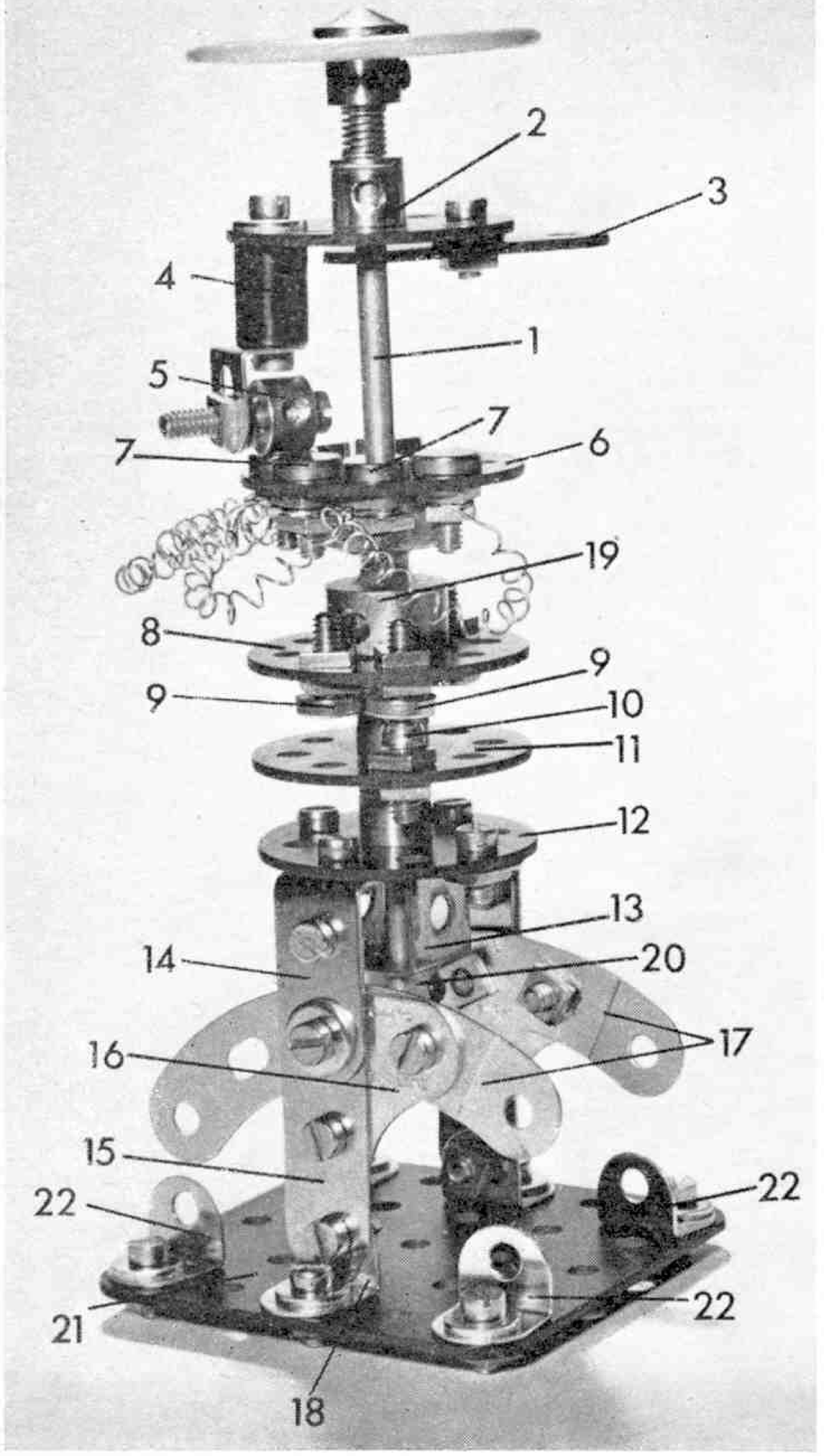


The 'Speed Selector' power pack holds eight U2 batteries. The brass tongue is fitted into one of a series of slots in the lid, each slot giving a different voltage depending on how fast one wants the cars to go. Lowest position is best for beginners! Two hand controllers can be seen in the foreground



among the model builders

An advanced Remote Control Switch designed by Mr. R. C. Stutter, of Hampton Wick, Kingston-on-Thames, Surrey. When connected to a suitable vehicle it gives forward/reverse/steering/speed control!



REMOTE controlled models seem to be all the rage these days—outside of radio-control, that is—and for a very good reason. There's something fascinating about making a model perform all sorts of intricate manoeuvres simply by twiddling a few knobs on a little control box. It's great fun operating remote-control models, I must admit, but it's worth remembering that it is the control box that makes the whole thing possible, and control boxes can be pretty complex pieces of apparatus.

You may remember the two control boxes I described for use with that rather magnificent tank we modelled a few months ago. These were not exactly simple, and yet were nowhere near as comprehensive as the unit, illustrated on this page, which was designed by Mr. R. C. Stutter of Kingston-on-Thames, Surrey. Our boxes simply gave independent forward/reverse control for two motors, thus limiting their use to tracked vehicles only, where two motor are used one to each track. Mr. Stutter's unit can be fitted to any 'ordinary' vehicle to give not only forward/reverse/turning control, but speed as well!

To obtain all the movements, the operated model must be powered by two motors, one providing traction and the other controlling steering. The speed regulator, of course, acts on the traction motor which must therefore be a D.C. example, as are all Electric Motors produced by Meccano. Assuming that the Motor is being operated from a 12 volt, 1 amp source, a 30 in. length of 14·22 ohms per yard resistance wire with a carrying capacity of 1 amp is required. This should be cut into five equal lengths and each length coiled round a thin knitting needle. I will explain the positioning of the coils in the Control Unit in due course. You should be able to obtain the resistance wire from any electrical suppliers, but, if they do not have the wire suggested above, any reasonable length of wire with a resistance of 12 ohms will suffice. Note, however, that the above length does not take into account the amount of wire used to make the connections. In other words, you should add a sufficient amount to wrap around the terminals.

Generally speaking the Remote Control Switch, as a whole, is composed of a series of smaller switches built up on eight-hole Insulating Bush Wheels. It is best to complete the Bush Wheel arrangements separately and to fit them on the central shaft when finished. A 5 in. Rod 1, incidentally, serves as the central shaft.

Taking the first Insulating Bush Wheel 2, a 1½ in. Insulating Strip 3 is fixed to it through one hole, but is spaced from it by a Washer on the shank of the securing bolt. The inside end hole in the Strip must lie immediately over the central hole in the Bush Wheel. Bolted diametrically opposite the Strip is an Insulating Spacer 4, to the other end of which a ½ in. by ½ in. Angle Bracket is fixed with the lug carrying the elongated hole pointing downwards. A ¾ in. Bolt, carrying a loose Collar 5, is held by two Nuts in this Angle Bracket.

Insulating Bush Wheel 6 will provide speed control for the drive motor and is, perhaps, the trickiest part of the unit. Six Contact Studs 7 are fixed in adjacent holes in the Bush Wheel, then the previously mentioned coils of resistance wire are connected between them. One coil connects the first and second studs, another the second and third Studs, another the third and fourth Studs, and so on until all the Studs have been wired.

Less complicated is Insulating Bush Wheel 8. This carries only four Contact Studs 9, the first two fixed in adjacent holes and the second two mounted in opposite adjacent holes. Note that two Nuts, one on each side of the Bush Wheel, are used to hold the Studs in position. Using two Nuts in this way allows the height of the Contact Studs to be adjusted. For the same reason, two Contact Screws 10 are each fixed by two Nuts in diametrically opposite holes of a fourth Bush Wheel 11. I should mention, incidentally, that the heads of these Contact Screws must lie on the same side of the Bush Wheel as its boss, while the heads of the Contact Studs in Bush Wheels 6 and 8 must lie on the opposite side of the boss.

Turning to the fifth—and last—Insulating Bush Wheel 12 a Double Bent Strip 13 is bolted to its non-boss side, as also are two 1 in. by ½ in. Angle Brackets 14, being secured through diametrically opposite holes. Each Angle Bracket is extended by a 2 in. Perforated Strip 15 (Elektrikit part No. 529), at the same time fixing a 1 in. Corner Bracket 16 and a 2½ in. Stepped Curved Strip 17 in position. An Angle Bracket 18 is lock-nutted to the lower end of Strip 15.

Assembly can now begin. A 1¼ in. Steering Wheel is fixed on one end of 5 in. Rod 1 to be followed by a Compression Spring and a Collar. Next, Bush Wheels 2 and 6 are added, the former being loose on the Rod, but the latter being tightly fixed in position. Collar 5 should connect with Contact Studs 7, the action of the Compression Spring ensuring continuous contact. Fixed by a Grub Screw to the boss of Bush Wheel 6 is a Socket Coupling 19, in the other end of which the boss of Bush Wheel 8 is mounted. This Bush Wheel should be free to turn both on the Rod and in the Socket Coupling.

Bush Wheel 8 is followed on the Rod by three Washers, then Bush Wheel 11 is fixed in place. Contact Screws 10 should make contact with Contact Studs 9, but should not be so tight that they prevent Bush Wheel 8 from being turned. Two Washers are now slipped on to the Rod, followed by Bush Wheel 12 which must be free to turn, being held on the Rod by a Collar 20 beneath Double Bent Strip 13. Finally, Angle Brackets 18 are bolted to a 2½ in. by 2½ in. Insulating Flat Plate 21 to each corner of which an Angle Bracket 22 is secured.

The whole remote control unit should swivel in Angle Brackets 18 to bring the respective ends of Curved Strips 17 in contact with corresponding Angle Brackets 22. When the unit is wired-up and in use, current will pass from the

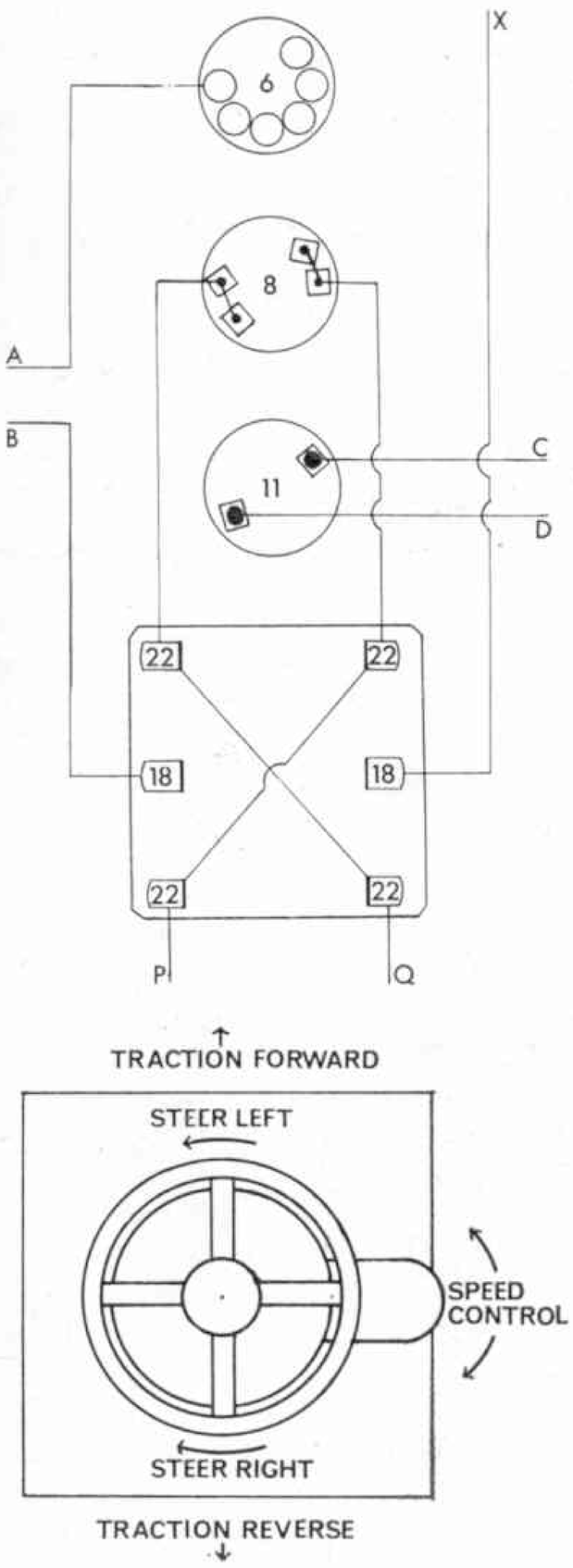
Angle Brackets to the Curved Strips, therefore it is advisable to remove the enamel covering the Strips to ensure good contact. The wiring system is shown in the accompanying diagram and shouldn't prove too difficult, but I suggest you use insulated wire in every case.

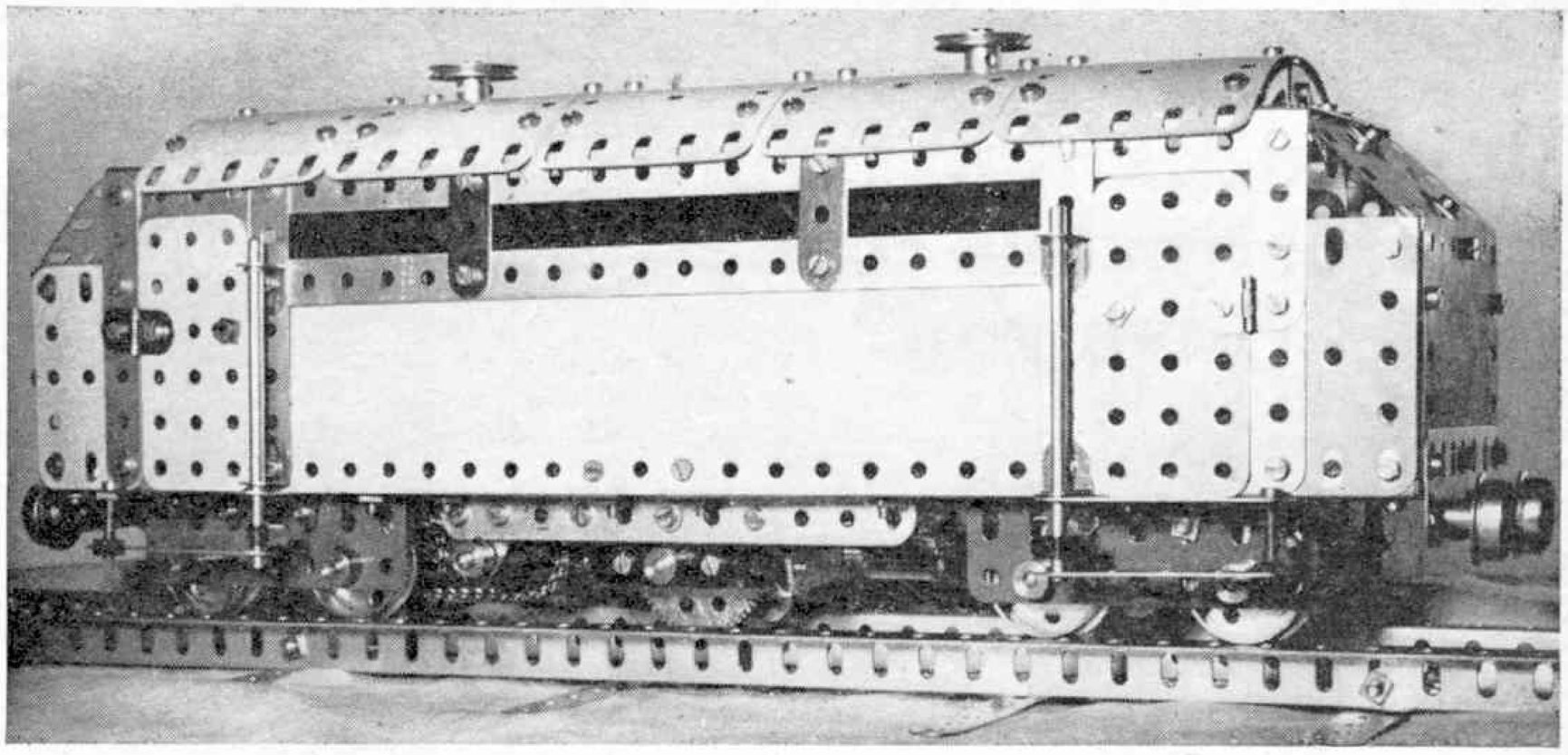
One last point—although Bush Wheel 11 is free on the central Rod, it must be prevented from turning in relation to Bush Wheel 12. This can be achieved by extending the vertical lugs of Angle Brackets 14 upwards and by anchoring the Bush Wheel to these extensions with, say, further Angle Brackets. An electrical contact, however, must not be made between Contact Studs 9 and any of the metal parts in the assembly attached to Bush Wheel 12.

Parts required:-

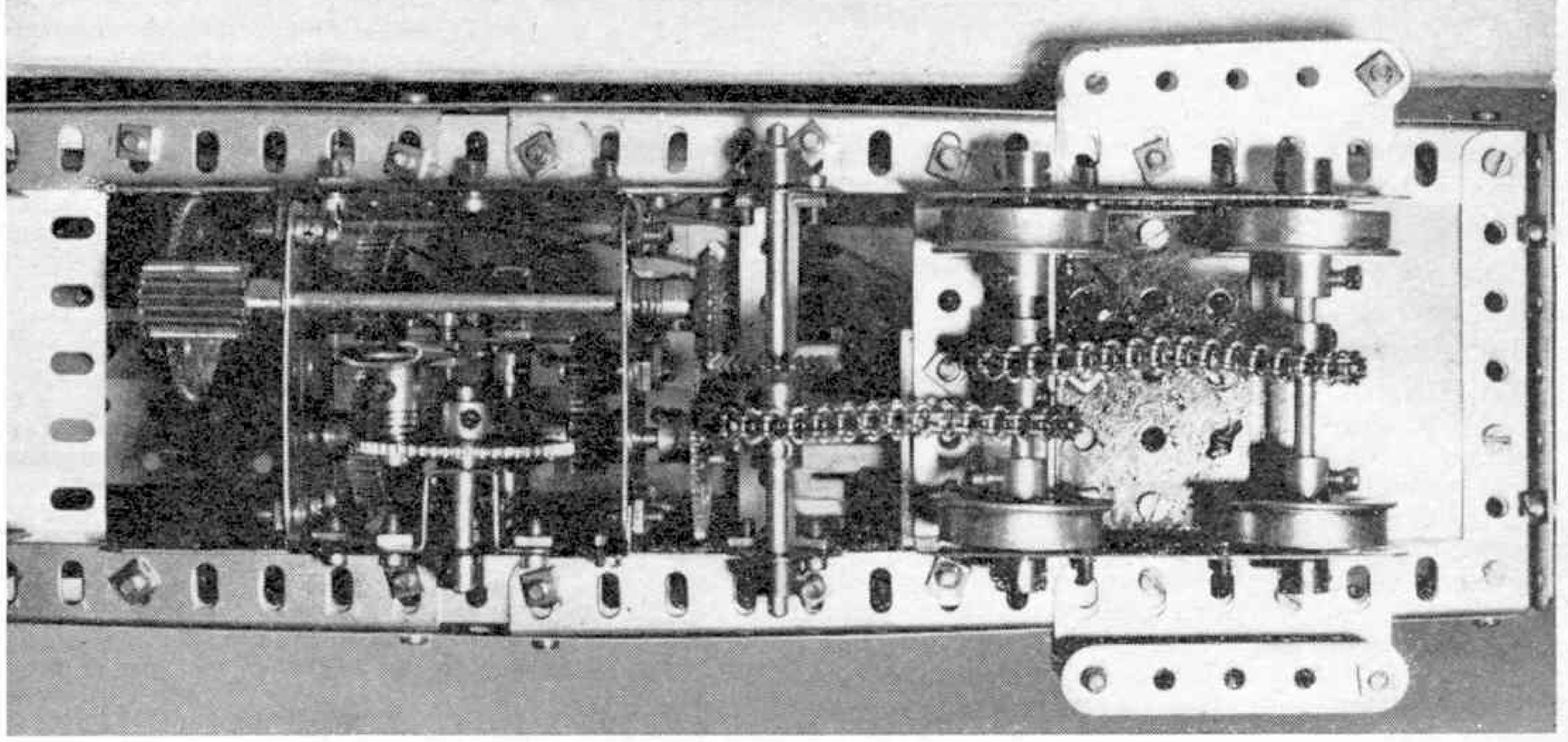
7 of No. 12	2 of No. 59	1 of No. 511
2 of No. 12b	2 of No. 90a	5 of No. 514
1 of No. 15	1 of No. 111	2 of No. 529
49 of No. 37a	1 of No. 120b	2 of No. 543
23 of No. 37b	2 of No. 133a	10 of No. 544
16 of No. 38	1 of No. 171	1 of No. 564
1 of No. 45	1 of No. 503	

Wiring diagram. Leads A and B are connected to the traction motor. Leads C and D are connected to the steering motor, while lead X is connected to the $\frac{3}{4}$ in. Bolt carrying Collar 5. Leads P and Q are connected to the Terminals of the battery

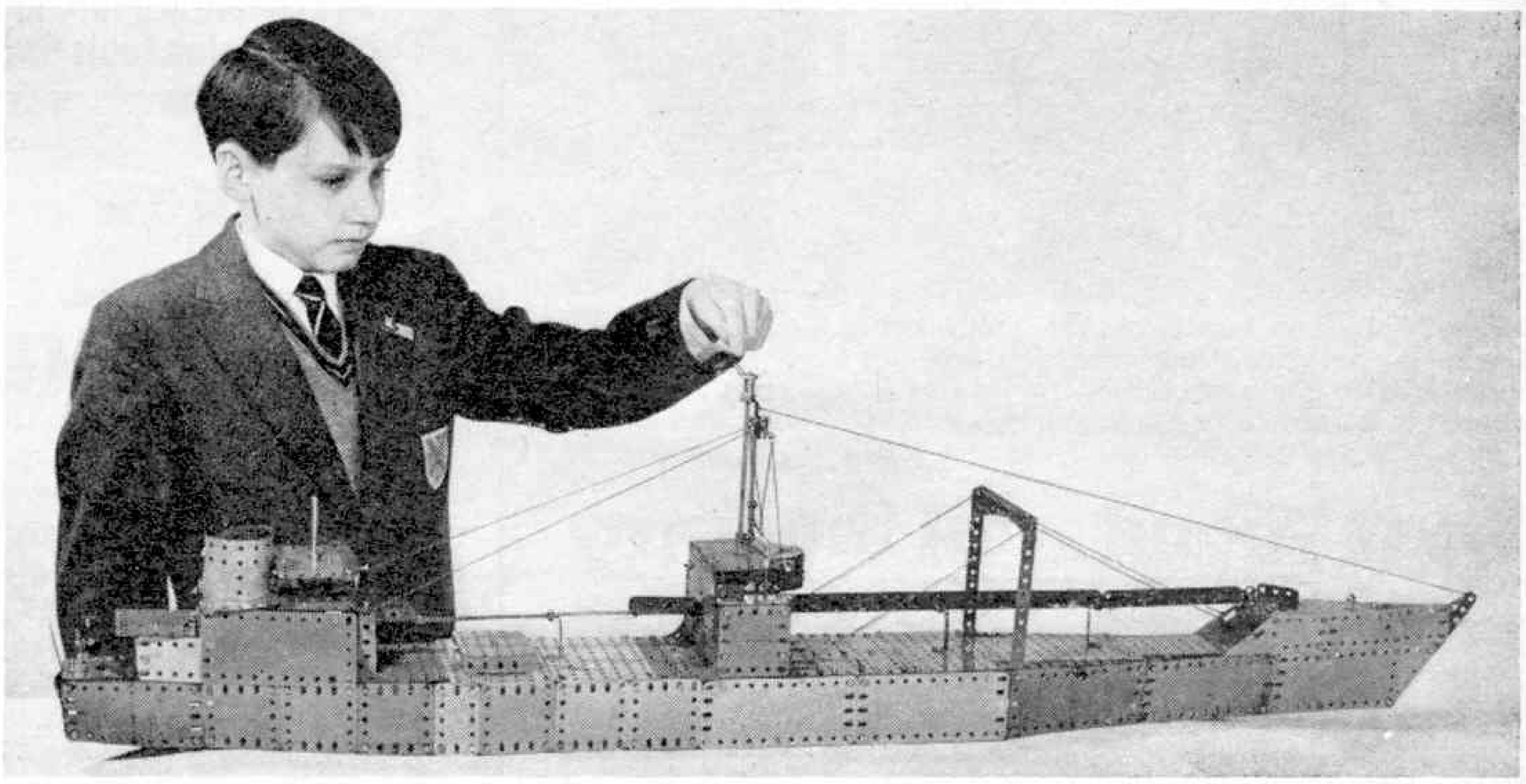




An extremely well-built and detailed model of a Diesel Engine, designed and built by Master P. Gelernter of London, W.14. Powered by a Meccano Power Drive Unit the engine runs on track built up from Angle Girders. The current is picked up from an isolated copper wire between the rails which, themselves, act as the negative terminals. Another feature of the model is a built-in automatic reversing mechanism that allows the engine to run a distance of about 20 ft., stop and then return



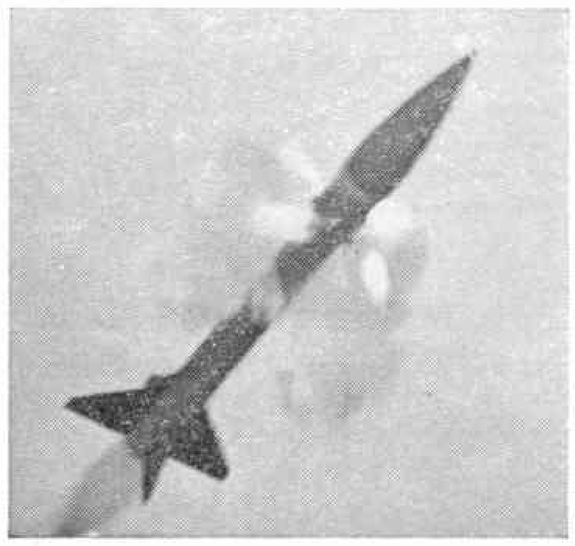
An underneath view of Master Gelernter's Diesel Engine showing the automatic reversing mechanism. Below: ships are rather unusual subjects for Meccano model-builders, but this picture shows young Neil Latham with a model Tanker he built for the competition. The feature Neil is pointing out is a rotating radar scanner powered by a No. 1 Clockwork Motor built into the hull



By popular demand

As soon as the last model-building competition closed in July, I began receiving letters from readers asking me to publish illustrations of interesting models submitted as entries. Always anxious to please, I collected all the suitable photographs of prize-winning constructions available and have managed to feature them in the past two issues of the M.M. However, we still have plenty of good photographs of models which, although they did not succeed in netting a prize, are still excellent examples of the Meccano model-building art, and I see no reason why these should not appear in print. This month, therefore, I am taking the opportunity of featuring the 'first off the pile' and I will include more in future issues, as space permits.

Tomorrow's soldier has an exciting future, a worthwhile career. Have you?



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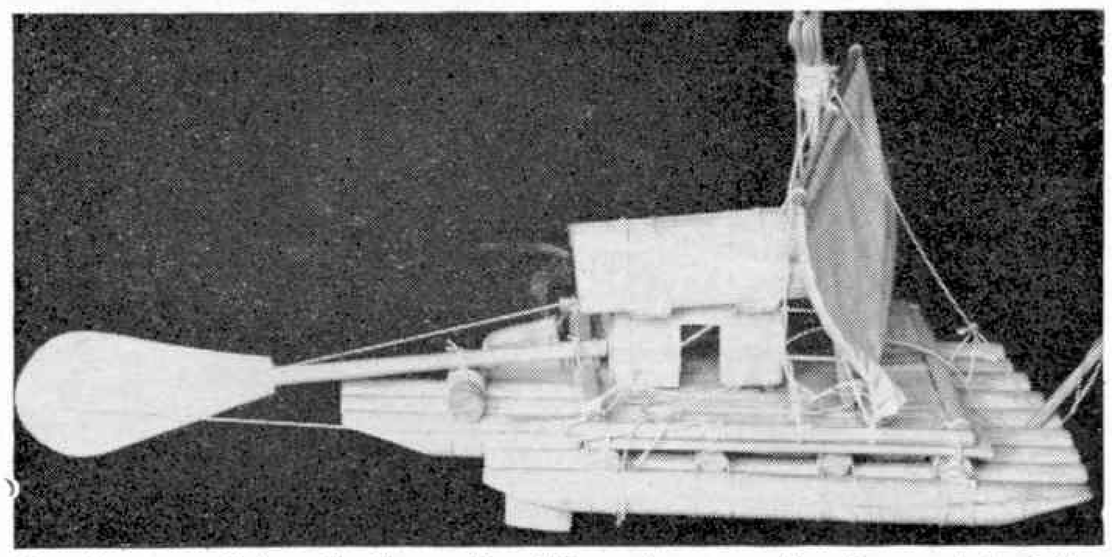

Here's something that's really different—an *authentic* model of the Kon Tiki raft in Solarbo Balsa. You may remember that the original Kon Tiki was made from balsa, too—in fact the word 'balsa' means 'raft' in Spanish. Would you like to make it? Well, like most models it's easy to tackle in Solarbo Balsa because you are using top quality material specially selected and graded for model building. And as a special offer to *Meccano Magazine* readers we can let you have a FREE PLAN showing all parts required *full size*, together with assembly details aad material list.

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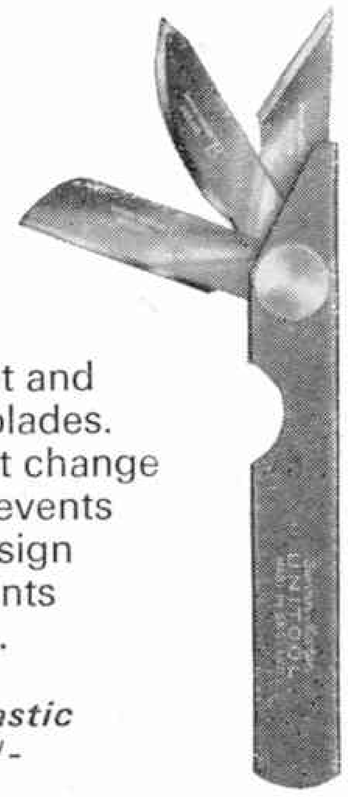

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LOCK-UP GARAGES FOR YOUR DINKY CARS

HERE'S a simple and inexpensive design for making lock-up garages from balsa sheet and strip. The plan shows the necessary parts for making a series of three garages in a block, but you can easily extend the length if you wish. In that case allow an extra $2\frac{1}{4}$ in. length of back for each additional garage and increase the length required of $\frac{1}{2}$ in. by $\frac{1}{4}$ in $\frac{1}{2}$ in. by $\frac{1}{8}$ in. strip, accordingly.

All the patterns shown at the bottom of the page are *full size*, so trace or copy directly on to sheet balsa of the right thickness ($\frac{3}{32}$ in. for the partition walls and doors; $\frac{3}{16}$ in. sheet for the ends and back. Also cut the $\frac{3}{16}$ in. square lengths for the door top and pillars to the sizes shown.

To assemble, join the two end walls to the back with balsa cement, using pins to hold in place. Then fit the 7 in. by $\frac{1}{2}$ in. by $\frac{1}{4}$ in. front beam and check that the whole assembly is square. Cement in the partition walls and stand the assembly on a flat surface and leave to set.

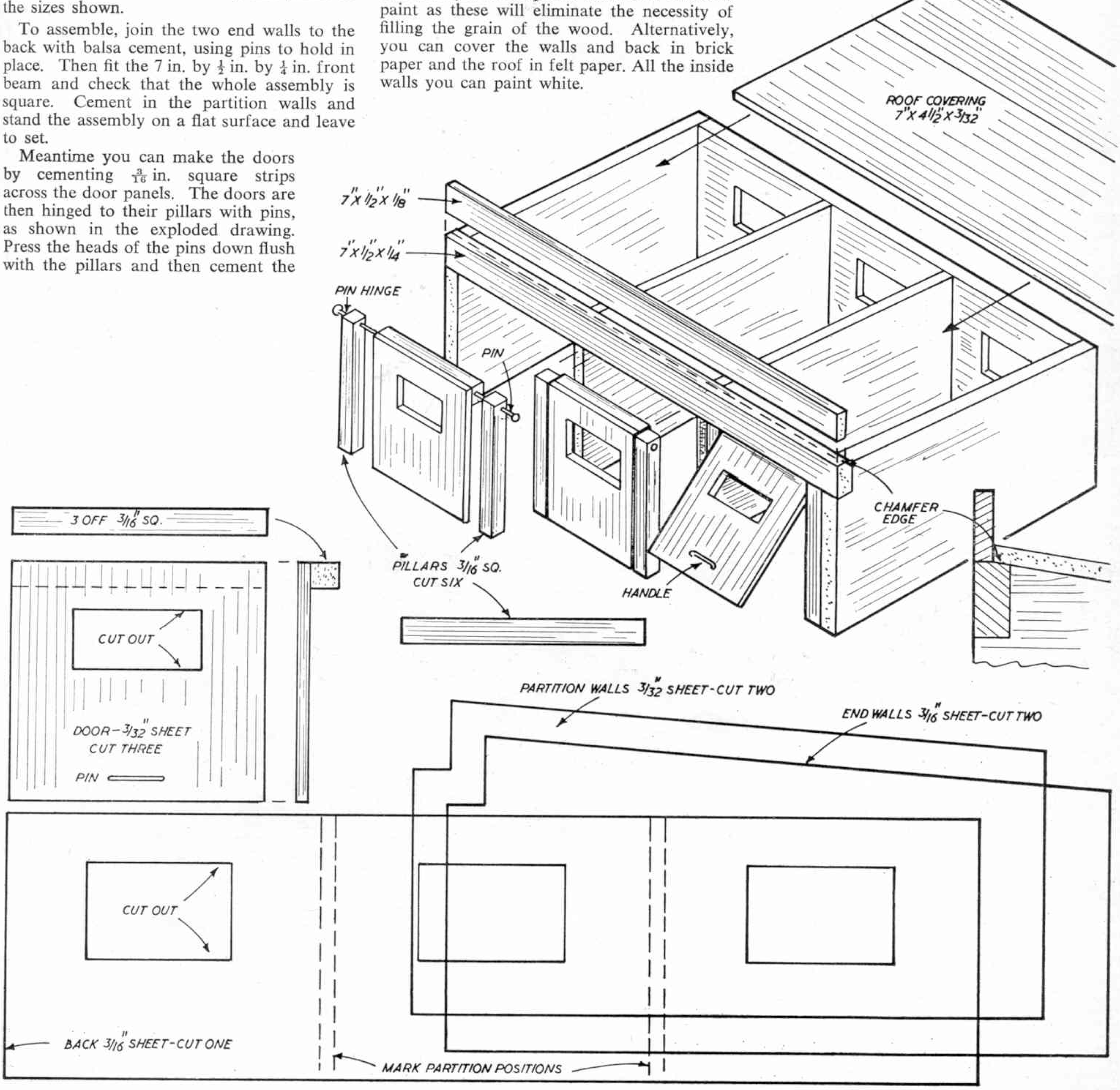
Meantime you can make the doors by cementing $\frac{3}{16}$ in. square strips across the door panels. The doors are then hinged to their pillars with pins, as shown in the exploded drawing. Press the heads of the pins down flush with the pillars and then cement the pillars into the main structure—i.e. to the end of partition walls, as appropriate. Before finally cementing each door 'set' in position, however, check that the door can be opened freely without binding. Also round off the top edge of each door, as necessary, so that it can swing up and open. Fit each door with a lifting handle bent from a pin.

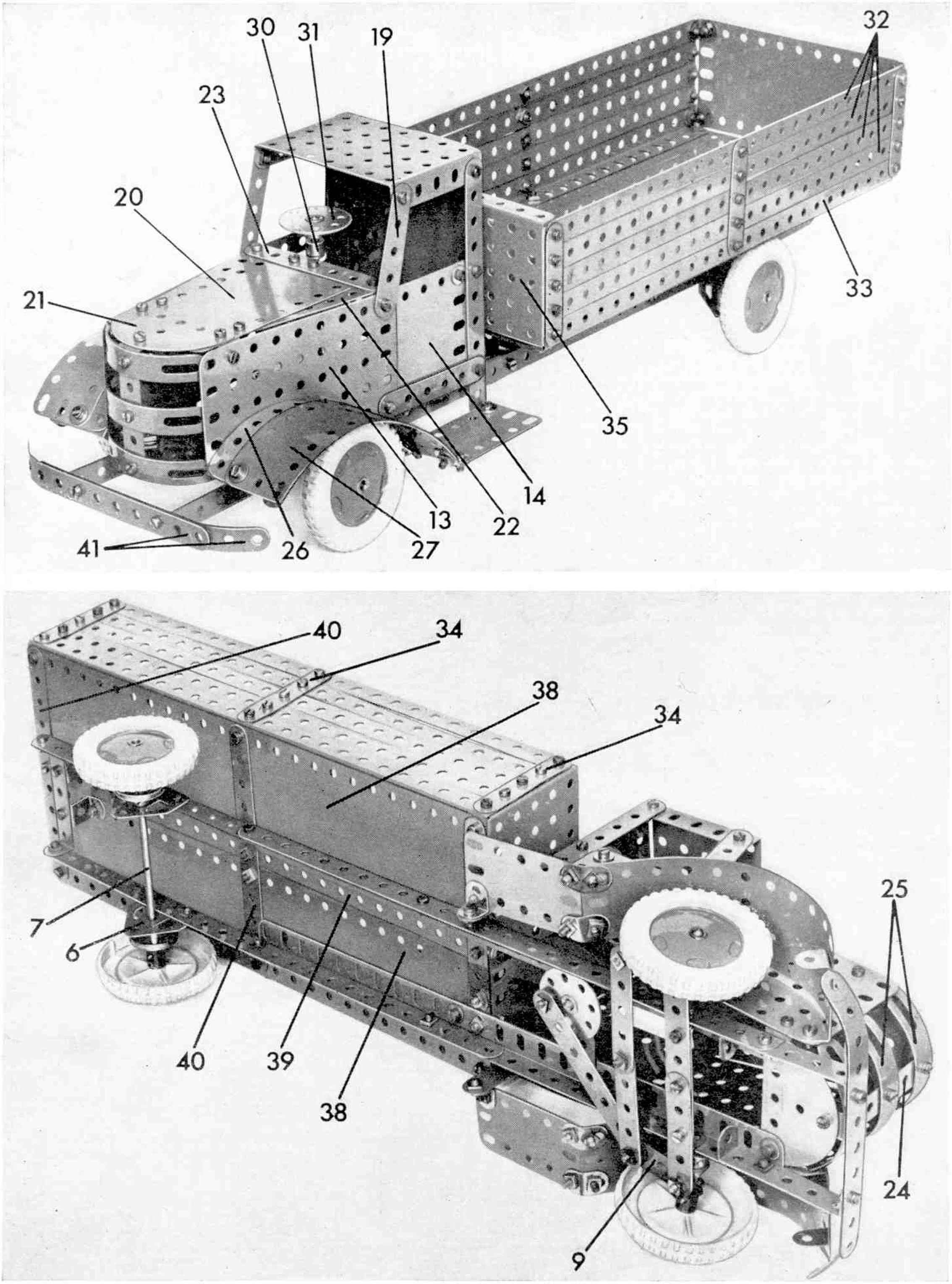
Finally cement on the upper 7 in. by $\frac{1}{2}$ in. by $\frac{1}{8}$ in. weatherboard, chamfer the back edge of the main beam and cover in the roof with $\frac{3}{32}$ in. sheet.

There are several ways of finishing your model in realistic colours. The quickest and easiest way is to use poster colours or emulsion paint as these will eliminate the necessity of filling the grain of the wood. Alternatively, you can cover the walls and back in brick paper and the roof in felt paper. All the inside walls you can paint white.

Glazing of windows should be done with rectangles of clear acetate sheet, cut slightly oversize and cemented in place on the inside (back and doors). Glazing should be done last of all—i.e. after painting.

Your model will be even more realistic if cemented down to a baseboard. Hardboard is excellent for this, but make the rough surface the top side of the baseboard. This will look more realistic than the shiny side if painted in 'tarmac' colour, and the model will cement down better to the rough hardboard surface.

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CARRY A LOAD—by Spanner

AS several readers have recently pointed out, it's been quite some time since we featured a model that can be built with standard Meccano Outfit No. 6. It's also some time since we featured a straightforward lorry so, this month, I thought I would kill two birds with one stone by including the fairly large lorry described below. Outfit No. 6 contains all the parts needed to build it.

CHASSIS AND STEERING

A strong but simple chassis is provided by two 12½ in. Angle Girders 1, each extended 12 holes by a 12½ in. Strip 2. At the front, Girders 1 are connected by a Semi-circular plate 3 while, at the rear, Strips 2 are joined by a 2½ in. by ½ in. Double Angle Strip 4. Also bolted between Girders 1, through their ninth holes, is a 2½ in. Strip 5. Flat Trunnions 6 are fixed to Strips 2 to provide bearings for a 5 in. Rod 7, held in place by 1 in. Fixed Pulleys. Mounted on the ends of this Rod are 2½ in. Road Wheels, as shown.

Secured to Angle Girders 1 through their fourth holes, is a 2½ in. by ½ in. Double Angle Strip, to which is bolted a 4½ in. compound strip 8, obtained from two 2½ in. Strips. Two similar arrangements are each provided by securing a 1½ in. Strip 9 between the lugs of a Double Bracket, using a Nut and a ⅜ in. Bolt, then the complete units are lock-nutted to the ends of compound strip 8. Another 4½ in. compound strip 10 is built up from two 2½ in. Strips and is lock-nutted between the ends of 1½ in. Strips 9, at the same time lock-nutting a 3½ in. Strip 11 to the nearside 1½ in. Strip. The other end of this Strip is, in turn, lock-nutted to an eight-hole Bush Wheel 12, which will later be mounted on the lower end of the steering column. A 1½ in. Rod, carrying a 2½ in. Road Wheel and a Collar is journalled in the lugs of each Double Bracket.

CAB AND BONNET

In the case of the bonnet and driving cab, it is possible to build the entire unit separately, mounting it on the chassis when completed, and I suggest that this is what you do. Each side is composed of a 4½ in. by 2½ in. Flat Plate 13 extended by a 2½ in. by 2½ in. Flexible Plate 14. This latter Plate is edged along the lower side by a 3 in. Strip 15, one end of which is bolted to a 5½ in. Strip 16. At the top, Plate 14 is connected to Strip 16 by a Fish Plate. Note that Strip 16 protrudes three holes below the lower edge of the Plate.

The back of the cab is formed by a compound 4½ in. by 3½ in. Flexible Plate 17 built up from a 4½ in. by 2½ in. and two 2½ in. by 1½ in. Flexible Plates. It is fixed to the sides by Angle Brackets and by a 3½ in. by ½ in. Double Angle Strip 18, the Bolts securing this Double Angle Strip also holding the roof—a 3½ in. by 2½ in. Flanged Plate—in position. 2½ in. Strips 19 act as the forward roof stays. A bonnet top is obtained from a 4½ in. by 2½ in. Flexible Plate 20, extended by a Semi-circular Plate 21 and edged by two 3½ in. Strips 22 joined by another 3½ in. Strip 23. The completed unit is secured in place by Angle Brackets while Semi-circular Plate 21 is joined to Semi-circular Plate 3 by a 2½ in. by ½ in. Double Angle Strip 24. Three Formed Slotted Strips 25 are bolted to this Double Angle Strip to represent the radiator grille.

Each combined mudguard and running board is built up from a 2½ in. by 1½ in. Triangular Flexible Plate 26 bolted to a 5½ in. by 1½ in. Flexible Plate 27 at the same time fixing a 1½ in. by ½ in. Double Angle Strip 28 in place. At its other end, Plate 27 is extended by a 2½ in. by 1½ in. Flexible Plate 29, attached to Plate 27 by Obtuse Angle Brackets. The finished arrangement is attached to the body by an Angle Bracket at the rear and by Double Angle Strip 28 at the front. A 4 in. Rod, journalled in Strip 5 and a Fishplate bolted to Strip 23, serves as the steering column, which is held in place by a Collar 30. Bush Wheel 12 is fixed on the lower end of the Rod while an eight-hole Bush Wheel 31 is secured on the upper end of the Rod to represent the steering wheel. Angle Brackets, incidentally, are used to fix the back and sides of the cab to the chassis.

LOAD BODY

Perhaps the most interesting aspect of the actual load carrying section of the model is the way Strips have been extensively used in its construction to provide greater strength and rigidity. Each side, in fact, is composed of four 12½ in. Strips 32, joined together and to a 12½ in. Angle Girder 33 by three 2½ in. Strips 34, at the same time securing a 5½ in. by 2½ in. Flanged Plate 35 between the sides to form the forward end. The back is represented by a 5½ in. by 2½ in. Flexible Plate 36, overlaid by two 5½ in. Strips 37 and attached to the sides by two 1 in. by 1 in. Angle Brackets and two ½ in. by ½ in. Angle Brackets.

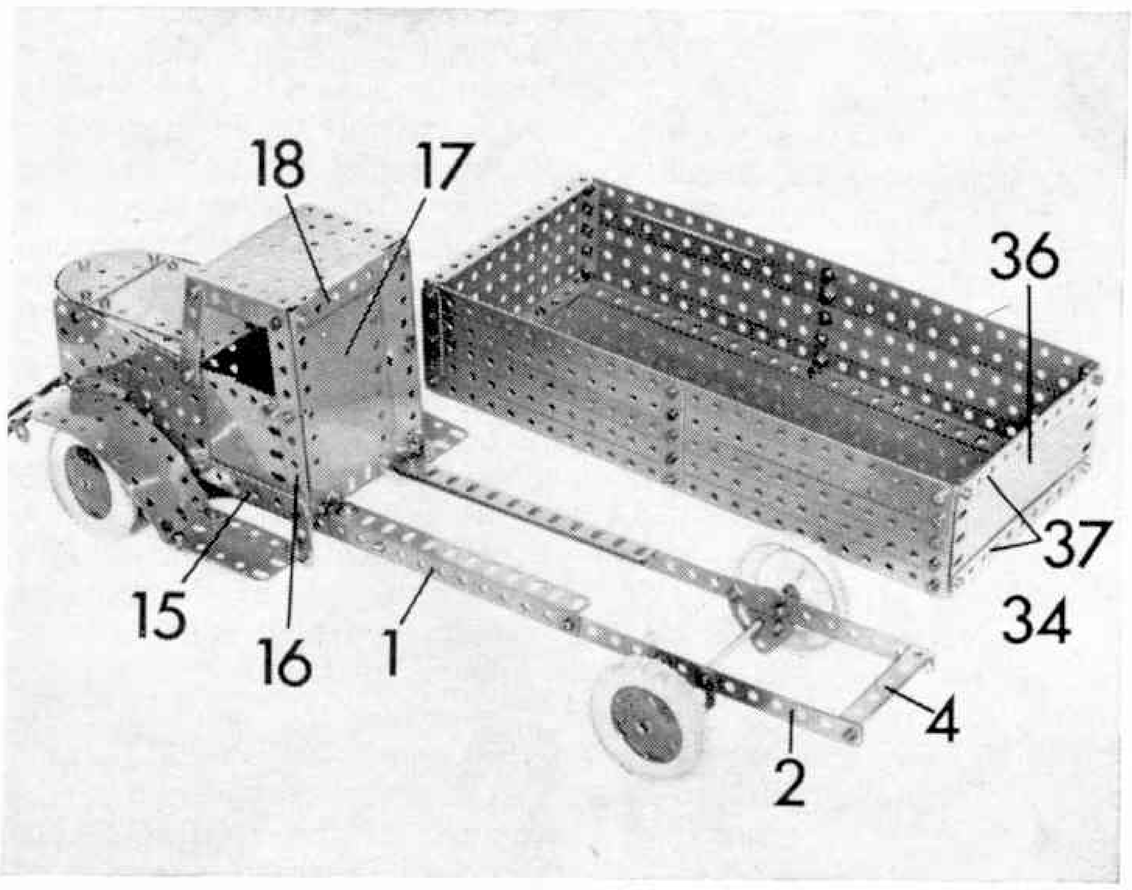
The floor or 'bed' of the load body is provided by two 12½ in. by 2½ in. Strip Plates 38 separated by a 12½ in. Strip 39. All are joined by three lateral 5½ in. Strips 40, placed one at each end and one in the centre. The whole unit is bolted to Angle Girders 33 and Flanged Plate 35. When finished the complete load body is attached to the chassis by two Double Brackets at the front and two ½ in. by ½ in. Reversed Angle Brackets at the rear. Finally, a front bumper is provided by two shaped 5½ in. Strips 41, overlapped nine holes and joined to Angle Girders 1 by two 2½ in. by ½ in. Double Angle Strips 42.

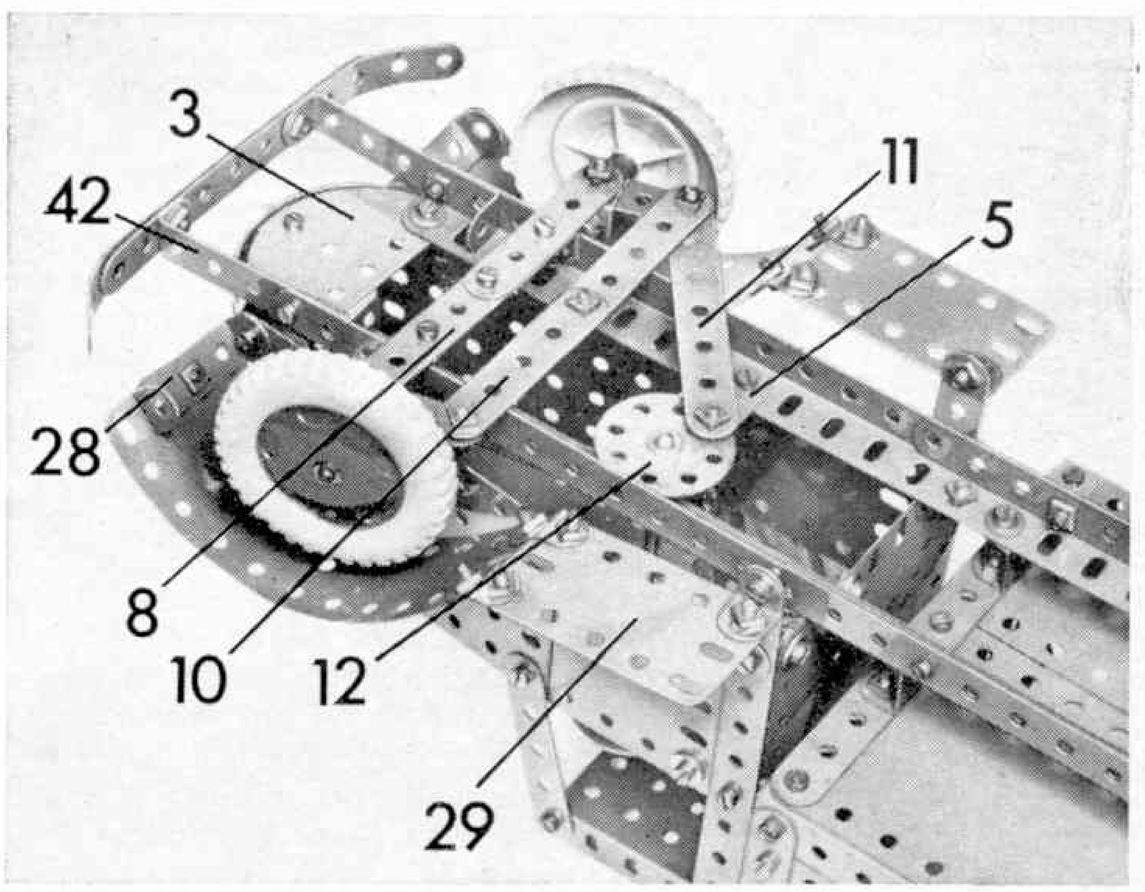
This completes the model as illustrated here, but several improvements can be made. For example, the windows could be glazed with Transparent Plastic Plates. The reason why we did not fit glazing was to allow access to the steering wheel which does, of course, operate. Another modification which springs to mind is the fitting of additional body and chassis details such as headlamps, sidelamps, exhaust pipe, etc. There are any number of things that could be included, really, provided you have the spare parts available.

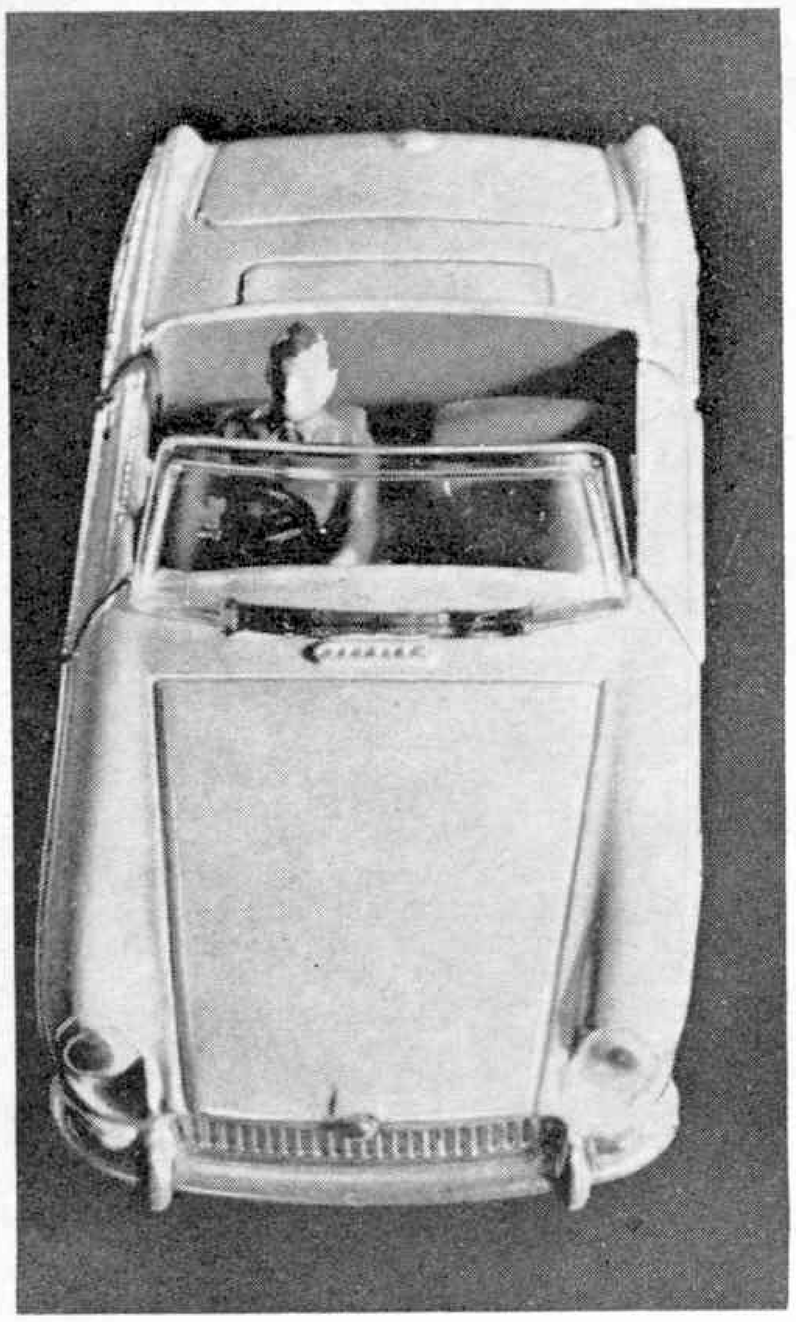
Something that I always advise builders to attempt, where possible, is the motorising of any suitable basic model we feature. I'm not sure how it could be done in this case, but I have no doubt that it would be possible even if it meant completely restyling the bed of the load body. Have a try, anyway!

PARTS REQUIRED

11 of No. 1	2 of No. 18a	5 of No. 111c
9 of No. 2	2 of No. 22	2 of No. 125
4 of No. 3	2 of No. 24	2 of No. 126a
2 of No. 4	146 of No. 37a	4 of No. 187
13 of No. 5	135 of No. 37b	4 of No. 188
2 of No. 6a	16 of No. 38	2 of No. 189
4 of No. 8	2 of No. 48	2 of No. 190
3 of No. 10½	5 of No. 48a	2 of No. 191
4 of No. 11	1 of No. 48b	1 of No. 192
26 of No. 12	1 of No. 52	2 of No. 197
2 of No. 12a	1 of No. 53	2 of No. 214
1 of No. 15	2 of No. 53a	3 of No. 215
1 of No. 15b	3 of No. 59	2 of No. 221

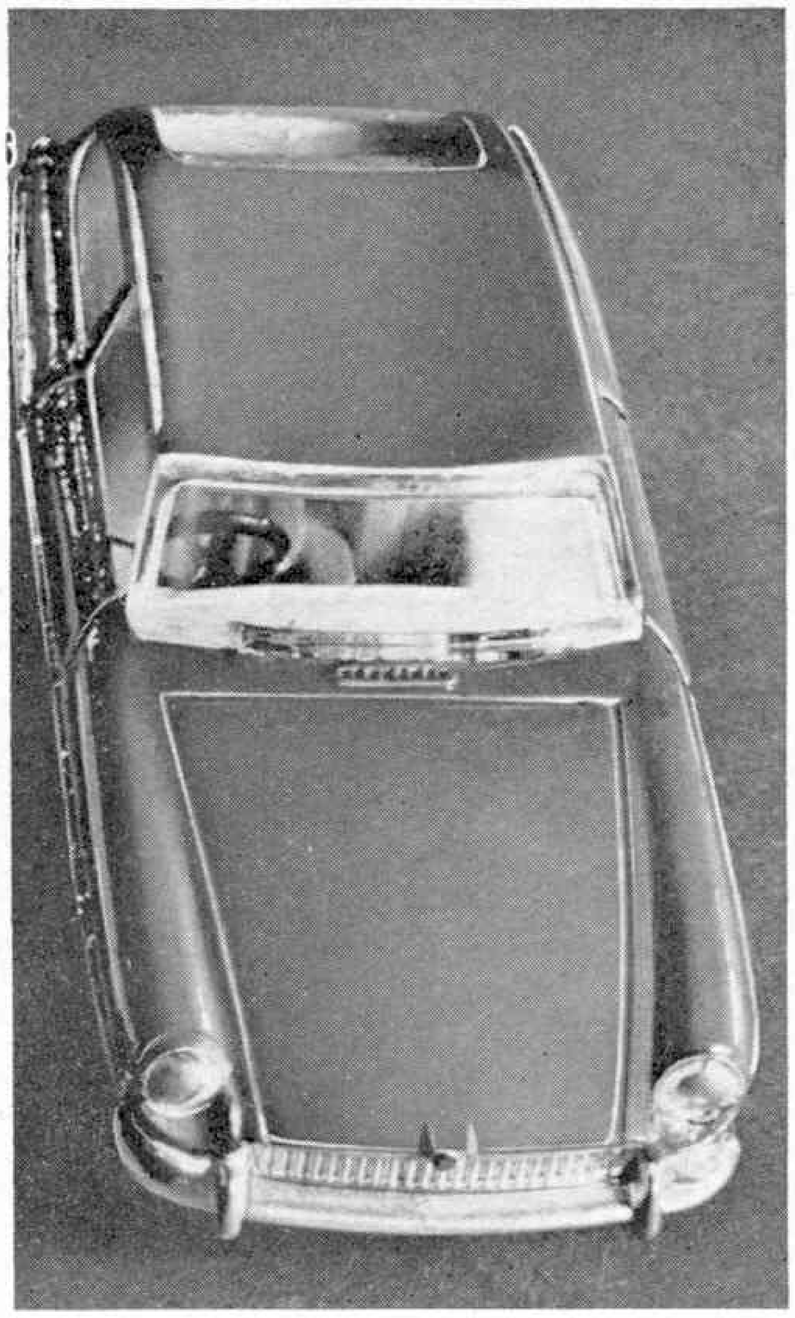






Chris Jelley

from drophead to fastback



SHORTLY after the MGB first appeared on the roads of Britain, a small-scale version of this popular sports car appeared in the range of Dinky Toys models. More recently, the M.G. Car Company introduced the MGB GT, a fastback version of the earlier drophead car. This has not, as yet, been reproduced in miniature form by Meccano, but there is no reason why Dinky Toy collectors should not add a model to their collections. By 'customization', the existing Dinky Toy MGB, No. 133, can be turned into the GT without too much trouble and, in this article, I propose to show you how it can be done.

Changing the basic Dinky Toy into the GT version is not a particularly difficult job, but it does involve the moulding of an entirely new back for the model. The process used is quite simple, but you may need a few attempts at it before obtaining a really good moulding. Materials required are a sheet of opaque Plastikard about 30 thou. thick, a sheet of similar clear plastic, a plastic solvent and a contact adhesive such as Evostik or Bostik 1. Also required are a piece of $\frac{1}{8}$ in. or $\frac{1}{4}$ in. thick plywood about 9 in. by 6 in. in dimension, and a block of hard, close-grained wood such as Parana Pine or Lime, with dimensions of $1\frac{1}{4}$ in. by $1\frac{1}{16}$-in. The length of the wood is not important, but should not be much less than an inch.

The moulding will be done round a wooden forme, carved to shape from the block of hard wood. Before carving can begin, however, the block should be marked up with pencil so that you know exactly where to cut. Start by measuring the vertical distance between the top of the windscreen on the model and the upper edge of the door. Mark this distance on each vertical side of the wooden block and draw corresponding lines parallel with the top of the block. Now measure the width of the upper edge of the windscreen and transfer the measurement to the top of the block. This measurement will be less than the width of the block, so remember to leave an equal distance at each side. Draw two lines, separated by the upper width of the windscreen, parallel to the sides of the block. These lines are crossed at right-angles by another line, situated $\frac{11}{16}$ in. from the end of the block, which is extended diagonally backwards down the sides of the block until it meets the rearmost ends of the first horizontal lines drawn on the sides.

Having now finished all the necessary guide-lines, carve the approximate shape required, using the modelling knife, then obtain the final shape with the rough file. When completed, the forme must be smoothed to a very fine finish, which is where the smooth file proves useful, but if you don't own a smooth file, fine sandpaper will do. You will see what shape is required incidentally, from any published photograph of the full-size car.

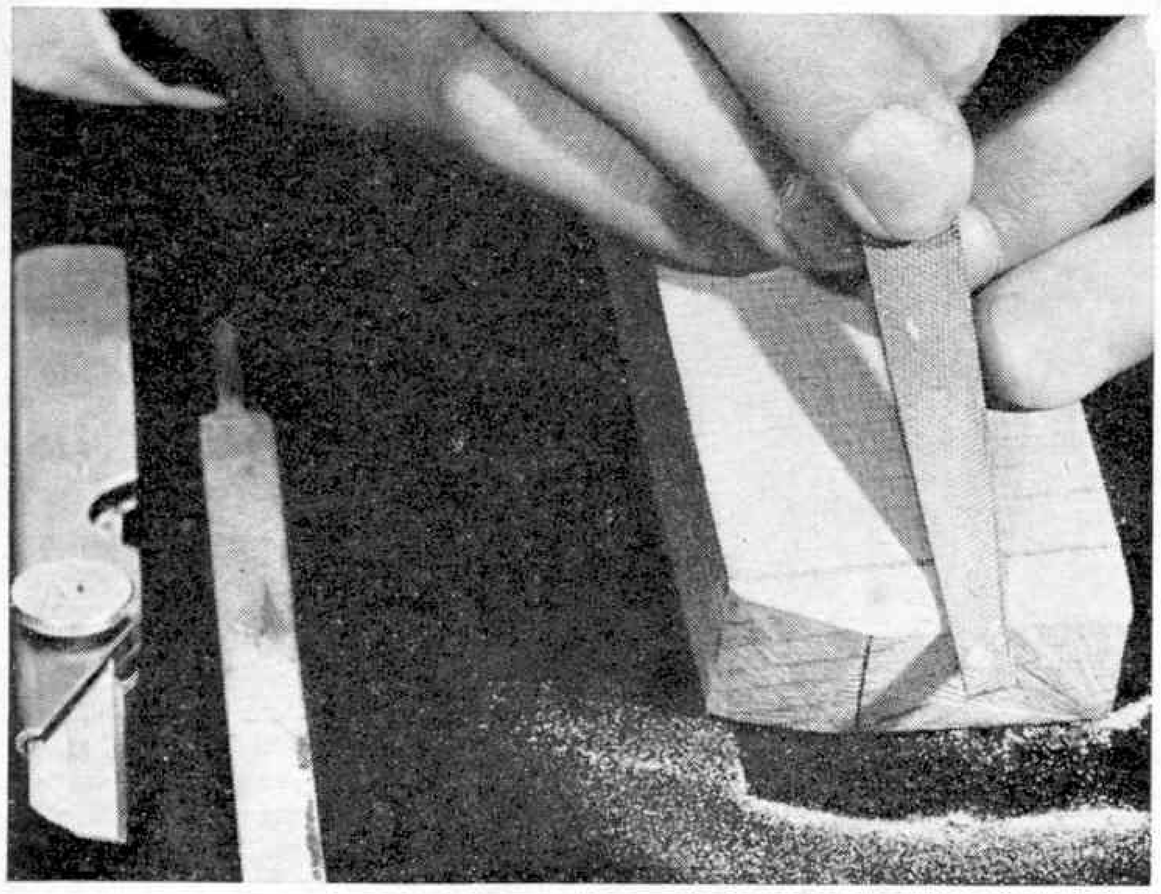
If you started with a rather long block of wood, as I did, it is advisable to saw the forme off the block, leaving perhaps three-quarters of an inch of wood below the actual shaped section of the forme. Drill a hole in the underside of the forme with a $\frac{3}{16}$ in. drill and insert a Meccano Rod or length of dowel. Now, cut a rectangular hole in the centre of the piece of plywood, slightly larger than the plan view of the forme. This can be done by drilling a series of holes in the plywood and by cutting out the wood between the holes with the modelling knife, cleaning up the edges with the rough file. Using the fine file, smooth the insides of the hole and round off all the upper edges.

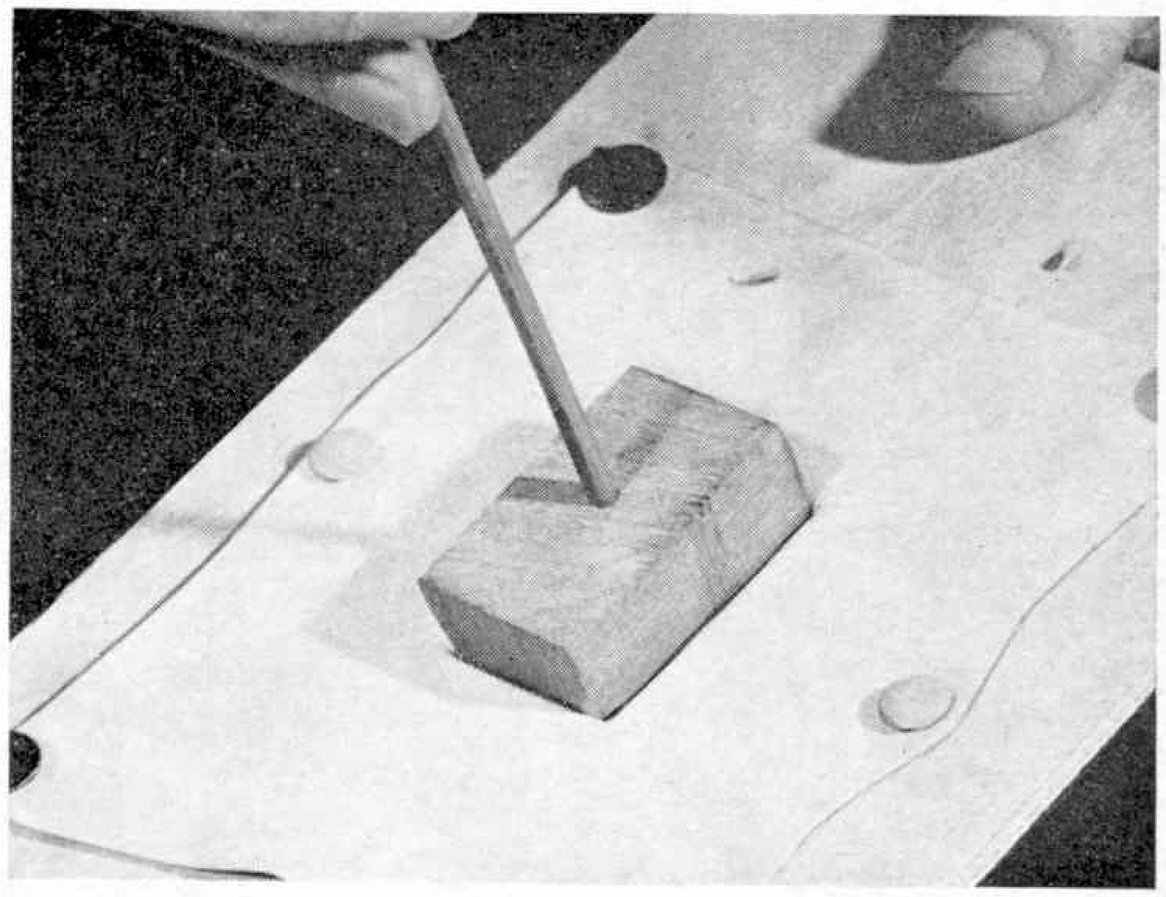
Moulding can now begin. Cut a piece of Plastikard about 6 in. by 4 in. and fix this over the hole in the plywood with drawing pins. Hold the mounted Plastikard in front of an electric fire until it becomes soft and begins to smoke slightly, then quickly press the forme into the hole, which will draw the Plastikard over the block to give you a well-shaped moulding (we hope!). The Plastikard cools very quickly, so don't waste any time with this part of the operation. Also, I suggest that you wear gloves as the heat encountered during softening of the Plastikard can be fairly uncomfortable. When solid, the moulding can be trimmed to shape with a pair of scissors.

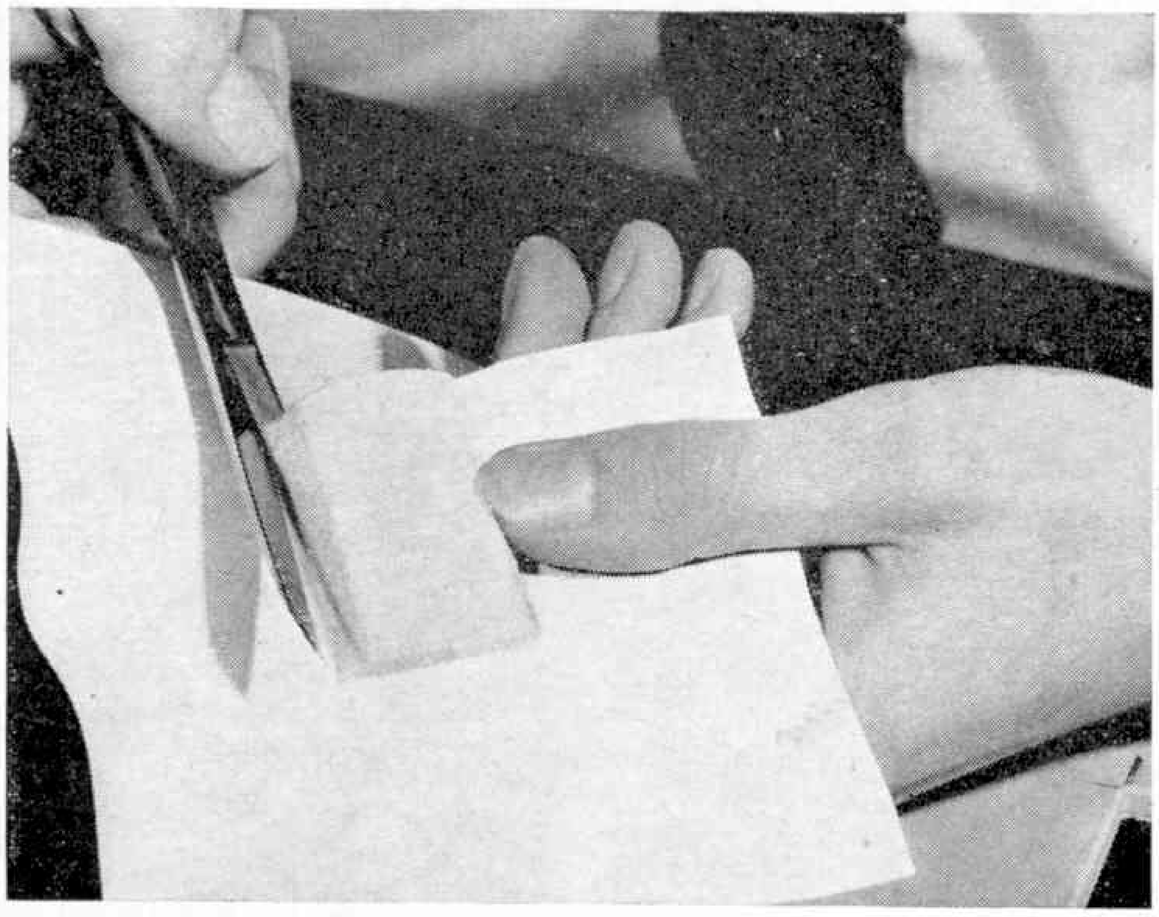
Before the moulding is fixed in position the windows must be cut in it with the modelling knife. Three windows are required, both rearmost side windows and the rear window which takes up almost the whole of the slanting portion of the back. The area normally enclosed by the forward side windows should be removed completely so as to allow the doors on the original Dinky Toy to be opened. Once cut out, the windows should be shaped with the file, after which suitable pieces of clear plastic are shaped and are fixed to the inside of the moulding with plastic solvent to provide "glazing".

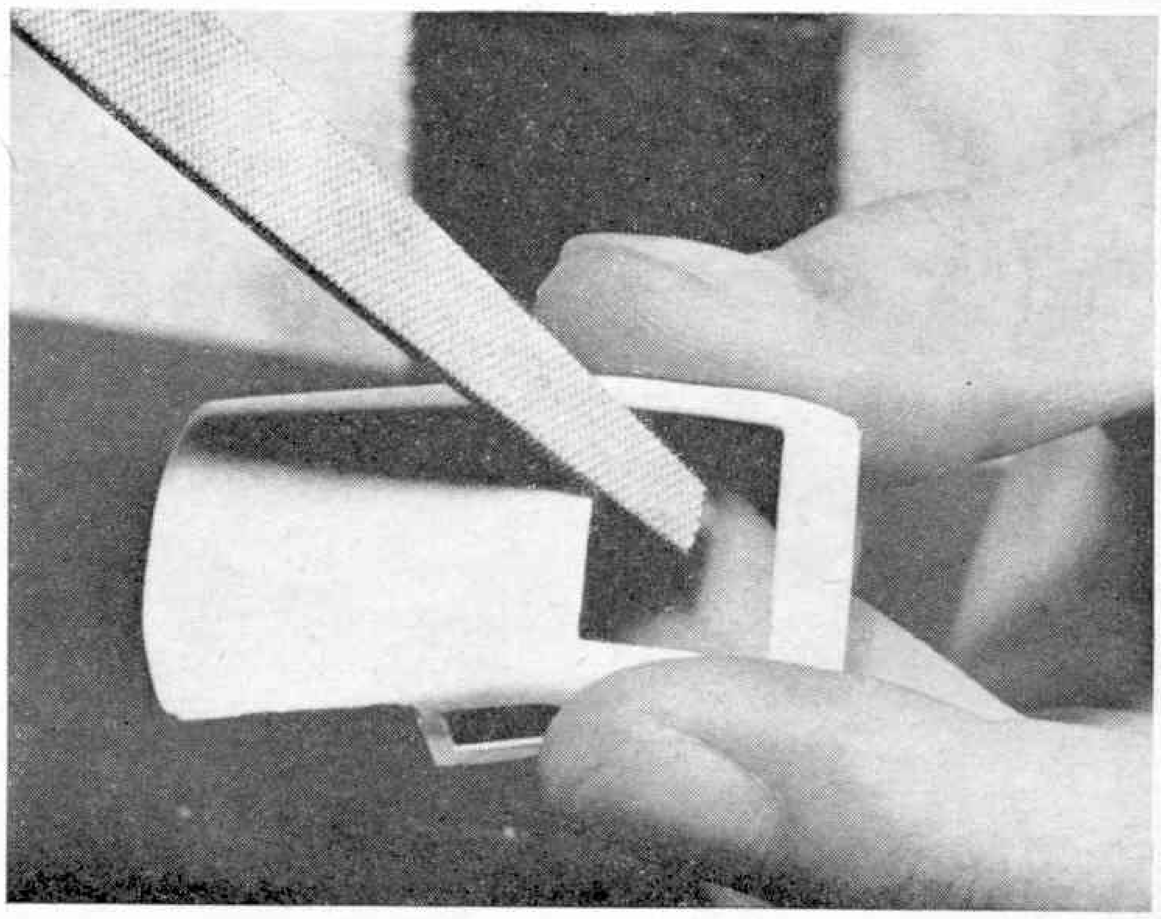
At this point it is advisable to paint, in a dark colour, the section at the back of the original model which will lie beneath the moulded fastback. The reason for this will soon become obvious —it is possible to see this section of the model through the rear window of the fastback, when in position, and if allowed to remain light in colour, it looks a little out of place. After the paint has dried, the completed moulding can be mounted in position using the contact adhesive. When the adhesive, in turn, is perfectly dry —and only then—the finished model should be repainted. We recommend any of the popular modellers' enamels such as those marketed by Humbrol.

Following the methods described above, you should be able to turn out a pretty good representation of the MGB GT, but there are alternative ways of

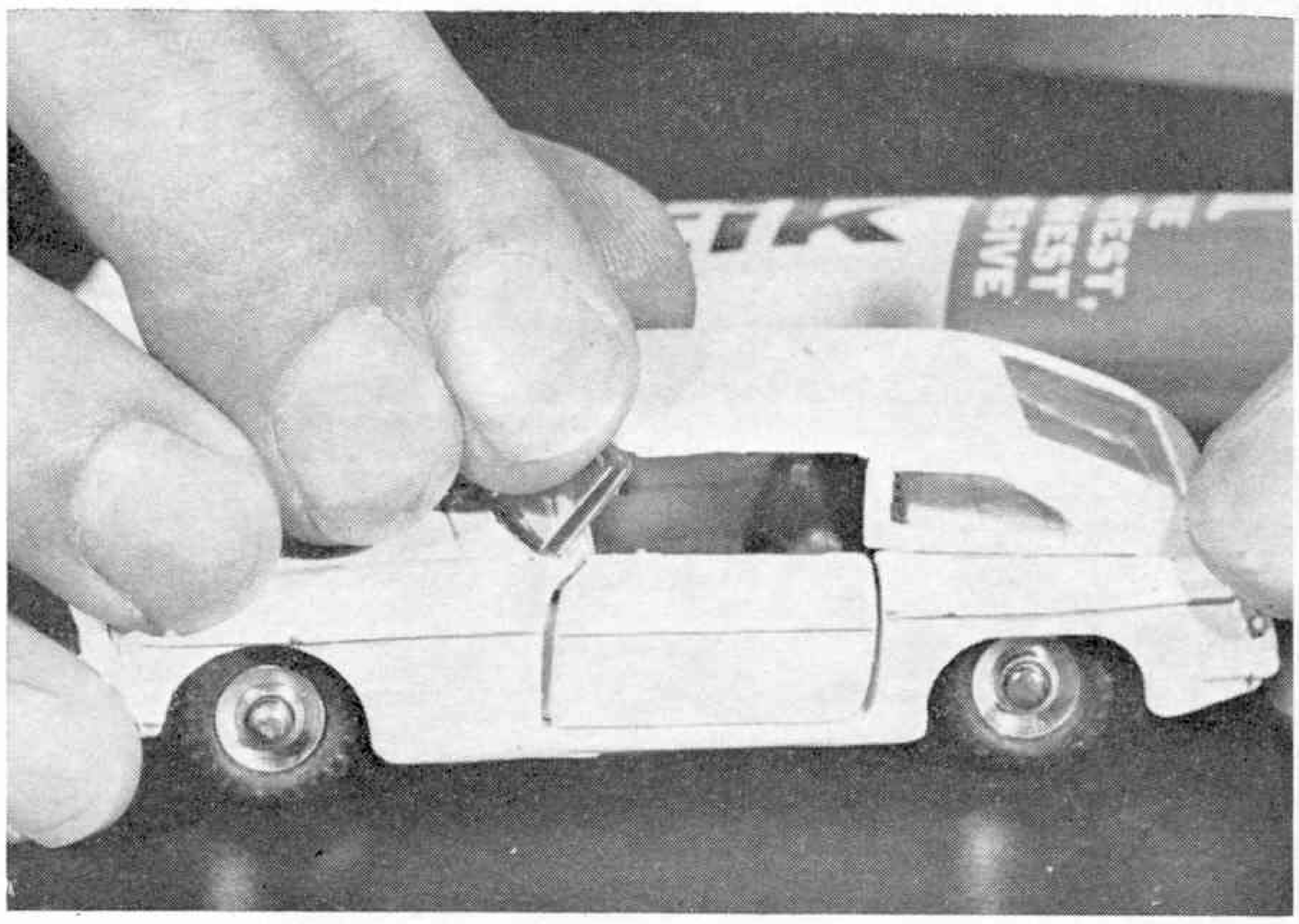








Opposite page: before and after! On the left is Dinky Toy No. 113 MGB. On the right, an MGB GT converted from the original



Top left: first step in moulding a completely new back for the model is to produce a wooden forme from a block of close-grained wood. This picture shows the roughly-carved shape being cleaned up with a file

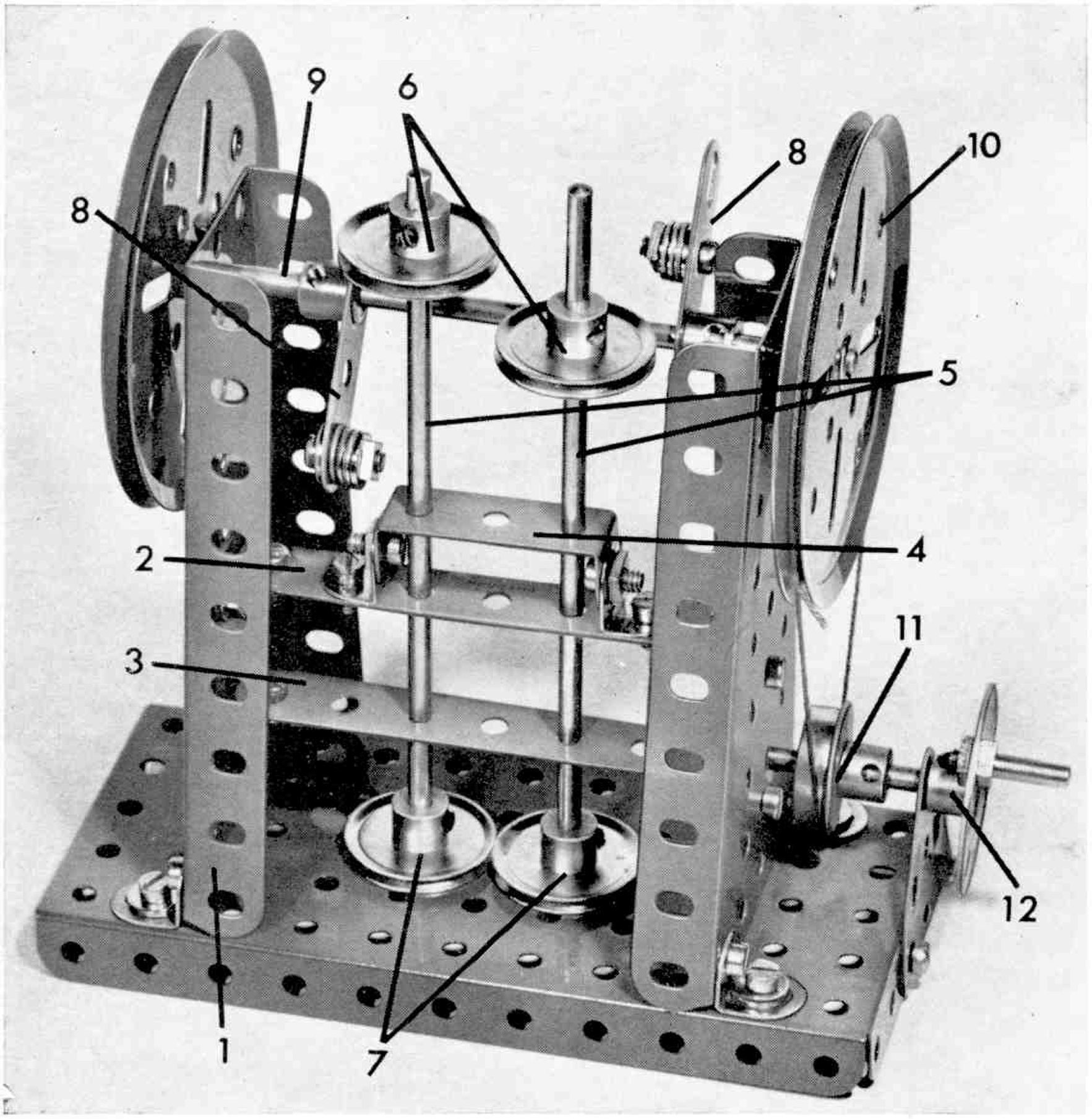
Top right: most difficult part of the job is the actual moulding operation. A sheet of Plastikard is pinned over a rectangular hole in a piece of plywood. The mounted Plastikard is heated and the wooden forme is quickly forced into tne hole

Bottom left: when cool the finished moulding is trimmed to shape with a pair of scissors

Bottom right: after windows have been cut in the basic moulding with the modelling knife, a file is used to obtain the correct size and shape

Right: having 'glazed' the windows with clear plastic sheet, the finished moulding is glued into position with a contact adhesive such as Bostik 1 or Evostick

obtaining the same results. By using clear Plastikard or acetate sheet, for example, the need to cut out windows is eliminated. All that need be done, in this case, is to cut pieces of adhesive tape to the shape of the windows and to stick them in the correct positions on the moulding. The complete moulding can then be painted and, when the adhesive tape is removed, the windows will be ready-made. Whichever method is used, however, you will find that a good deal of minute trimming and filing will be necessary before the moulding will fit exactly in place, but if you still find that the moulding will not fit perfectly, even after hours of patient work, don't worry. Any gaps can be filled in with plastic body putty.



The 'Double Trip Hammer'. Both hammers are operated automatically when the handle at the side is turned. Two tappets convert this rotary motion of the handle into the 'up and down' motion of the hammers

THEY ARE NOT NEW

ILLUSTRATED here you will find three small Meccano models. They're not new, but I haven't seen them before and I doubt if any of today's readers have either—I found them described in a 1928 issue of Meccano Magazine! I should explain that, when I have a bit of spare time, I like to browse through the volumes of early Magazines that I have in the office, not only because they contain all sorts of interesting articles, but also because they feature an enormous number of Meccano models. The three constructions described below are just three examples that caught my eye and which I thought present-day builders would like to see.

ELECTRIC TRUCK

First of the three was described quite simply as an 'Electric Truck', and was claimed to be, 'a realistic reproduction of a type of electrically-operated truck used in railway stations, factories, etc., for the expeditious handling of luggage or materials'. I found it very easy to build, although I did take the liberty of making one or two small alterations. Three 2½ in. Strips 1 are bolted to a 5½ in. by 2½ in. Flanged Plate 2, to extend three holes, after which they are joined by a 1½ in. Strip 3, at the same time securing a ½ in. by ½ in. Angle Bracket 4 in position. Five 2½ in. by ½ in. Double Angle Strips 5 are then fixed to the top of the Flanged Plate, three above Strips 1 and the remaining two each spaced from the Plate by a Washer on the shank of the fixing Bolt. Another 2½ in. by ½ in. Double Angle Strip 6 is bolted between Double Angle Strips 5 to brace them.

At this stage the wheels should be added. Bolted to the underside of Flanged Plate 2 is a Double Bent Strip, to which a 1½ in. by ½ in. Double Angle Strip 7 is fixed by a lock-nutted ½ in. Bolt, a ½ in. loose Pulley 8 being used as a spacer between the Angle Strip and the Bent Strip. A 2 in. Rod 9 is journalled in the lugs of the Double Angle Strips and is held in place by 1 in. Fixed Pulleys with Rubber Rings.

Two Flat Trunnions 10 are now bolted to the side flanges of Plate 2, to provide bearings for a 3½ in. Rod, also held in place by 1 in. Fixed Pulleys 11, spaced from the Flat Trunnions by Washers. Fixed in the centre of the Rod are two ¾ in. Flanged Wheels 12, which will later provide the drum for a simple but very effective brake. The steering column is represented by a second 3½ in. Rod 13, journalled in outside Strip 1 and a 1 in. by 1 in. Angle Bracket 14, bolted to corresponding Double Angle Strip 5. A Spring Clip beneath this Angle Bracket and a ¾ in. Flanged Wheel above hold the Rod in place. A ¾ in. Bolt is fixed in the boss of the Flanged Wheel to act as the actual steering handle, while a 1 in. by ½ in. Angle Bracket 15 is bolted to the underside of Flanged Plate 2, immediately forward of the off-side Flat Trunnion 10. An 'endless' length of Cord is then passed through the end hole in this Angle Bracket, is wrapped completely round a 1 in. Pulley 16 fixed to the lower end of Rod 13, and is finally attached to Double Angle Strip 7 through its nearside hole.

It now needs only the earlier-mentioned brake to complete the model. Two Double Brackets 17 are bolted to the arm of a Crank, which is then fixed, along with another Crank 18, on a 3½ in. Rod, held by Spring Clips in a 2½ in. by ½ in. Double Angle Strip 19 bolted to the front flange of Plate 2. A length of Cord is then attached to Crank 18 through its centre hole, is passed through the hole in the free lug of Angle Bracket 5, is threaded through the centre hole in Double Angle Strip 19, is wrapped several times around Flange Wheels 12 and is tied to the Double Bent Strip bolted to the underside of Flanged Plate 2.

PARTS REQUIRED

3 of No. 5	5 of No. 22	7 of No. 48a
1 of No. 6a	1 of No. 23	1 of No. 52
2 of No. 11	3 of No. 35	2 of No. 62
1 of No. 12	29 of No. 37a	1 of No. 111
1 of No. 12a	27 of No. 37b	1 of No. 111a
1 of No. 12b	5 of No. 38	2 of No. 126a
3 of No. 16	1 of No. 40	2 of No. 155
1 of No. 17	1 of No. 45	
3 of No. 20b	1 of No. 48	

AUTOMATIC HAMMER

Equally correct today is the original description of our second 'old' model—'Double Trip Hammer'. As the name implies, it's a machine incorporating two hammers which are operated automatically by the action of a handle at the side. On a real machine, of course, the operation would be controlled by compressed air.

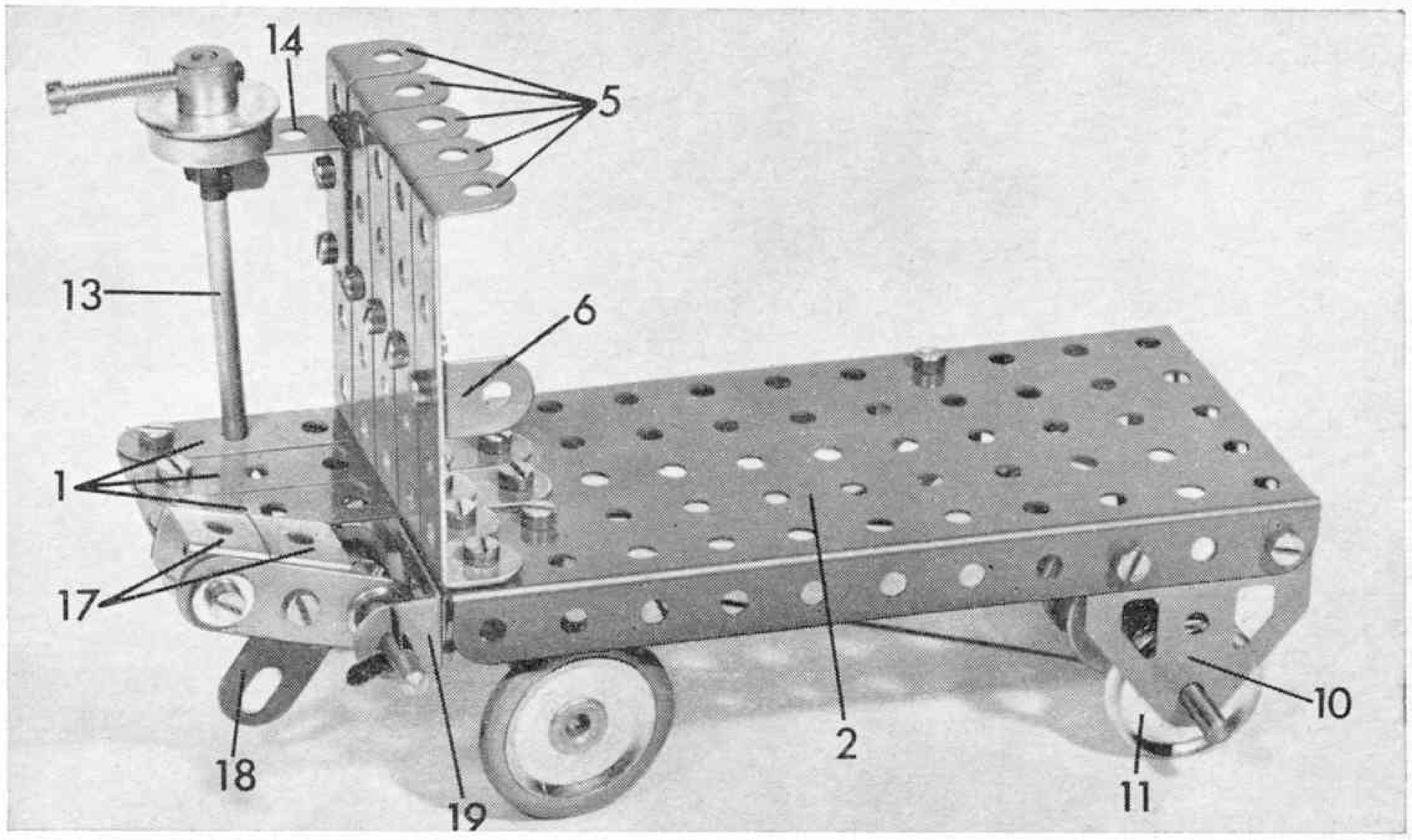
Construction, again, is very easy. Two Flanged Sector Plates 1, separated by a distance of seven holes, are secured to a 5½ in. by 2½ in. Flanged Plate by Angle Brackets. Fixed between the Sector Plates, also by Angle Brackets, are two 3½ in. Strips 2 and 3, to the upper of which a 1½ in. by ½ in. Double Angle Strip 4 is attached, again by Angle Brackets. Two 5 in. Rods 5, each carrying two 1 in. Fixed Pulleys 6 and 7, are mounted in the end holes of this Double Angle Strip and in the corresponding holes of Strips 2 and 3. The Pulleys are fixed on the Rods in the positions shown in the accompanying illustration.

Pulleys 7, of course, represent the hammers which are lifted alternately by the action of two 'tappets' striking against Pulleys 6. Each tappet consists of a Crank 8, in the arm of which is fixed a $\frac{3}{8}$ in. Bolt, carrying a number of Washers on its shank. Note that the Bolt is fixed in the end hole of one Crank and in the centre hole of the other. The Cranks are mounted at 180 degrees to each other on a $4\frac{1}{2}$ in. Rod 9, journalled in the Sector Plates and held in place by two 3 in. Pulleys 10.

An operating handle is now built up from a 2 in. Rod, carrying a $\frac{3}{4}$ in. Flanged Wheel 11, which is mounted in one of the Sector Plates and in a Flat Trunnion bolted to the end flange of the Flanged Plate. A Collar and an eight-hole Bush Wheel 12 hold the Rod in position. Finally, a Threaded Pin is mounted in the face of the Bush Wheel and Flanged Wheel 11 is connected to corresponding Pulley 10 by a Cord driving band.

PARTS REQUIRED

2 of No. 3	4 of No. 22	1 of No. 52
10 of No. 12	1 of No. 24	1 of No. 54
2 of No. 15	24 of No. 37a	1 of No. 59
1 of No. 15a	22 of No. 37b	2 of No. 62
1 of No. 17	13 of No. 38	2 of No. 111c
2 of No. 19b	1 of No. 40	1 of No. 115
1 of No. 20b	1 of No. 48	1 of No. 126a



Although it is a very simple model, the Electric Truck is an excellent reproduction of a vehicle still commonly seen on railway stations everywhere

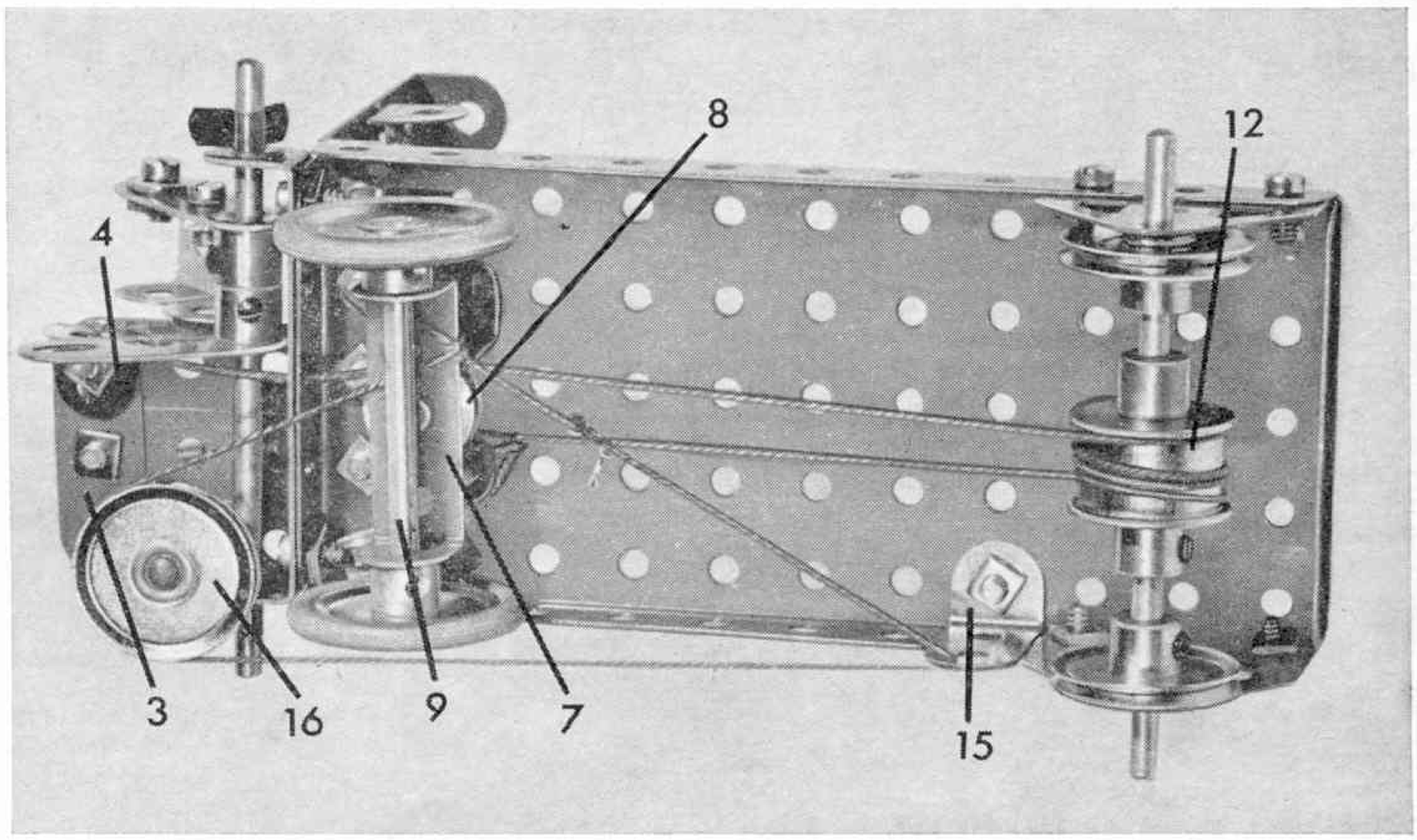
SOAP BOX CART?

Third and final model was called, quite simply, a 'Meccano Coaster', because it was 'a type of vehicle intended principally for travelling down-hill by the force of gravity'. Whatever it was called, however, it still looks to me like a sophisticated version of a child's soap box cart. To build it, a $5\frac{1}{2}$ in. by $2\frac{1}{2}$ in. Flanged Plate 1 is extended forward four holes by two $5\frac{1}{2}$ in. Strips 2, which are then connected by a $2\frac{1}{2}$ in. by $2\frac{1}{2}$ in. Double Angle Strip 3, lugs uppermost. Another $2\frac{1}{2}$ in. by $\frac{1}{2}$ in. Double Angle Strip 4 is fixed to the lugs of this Double Angle Strip to provide bearings for the steering column, a $1\frac{1}{2}$ in. Rod carrying a 1 in. Fixed Pulley 5 at the top and an eight-hole Bush Wheel 6 at the lower end.

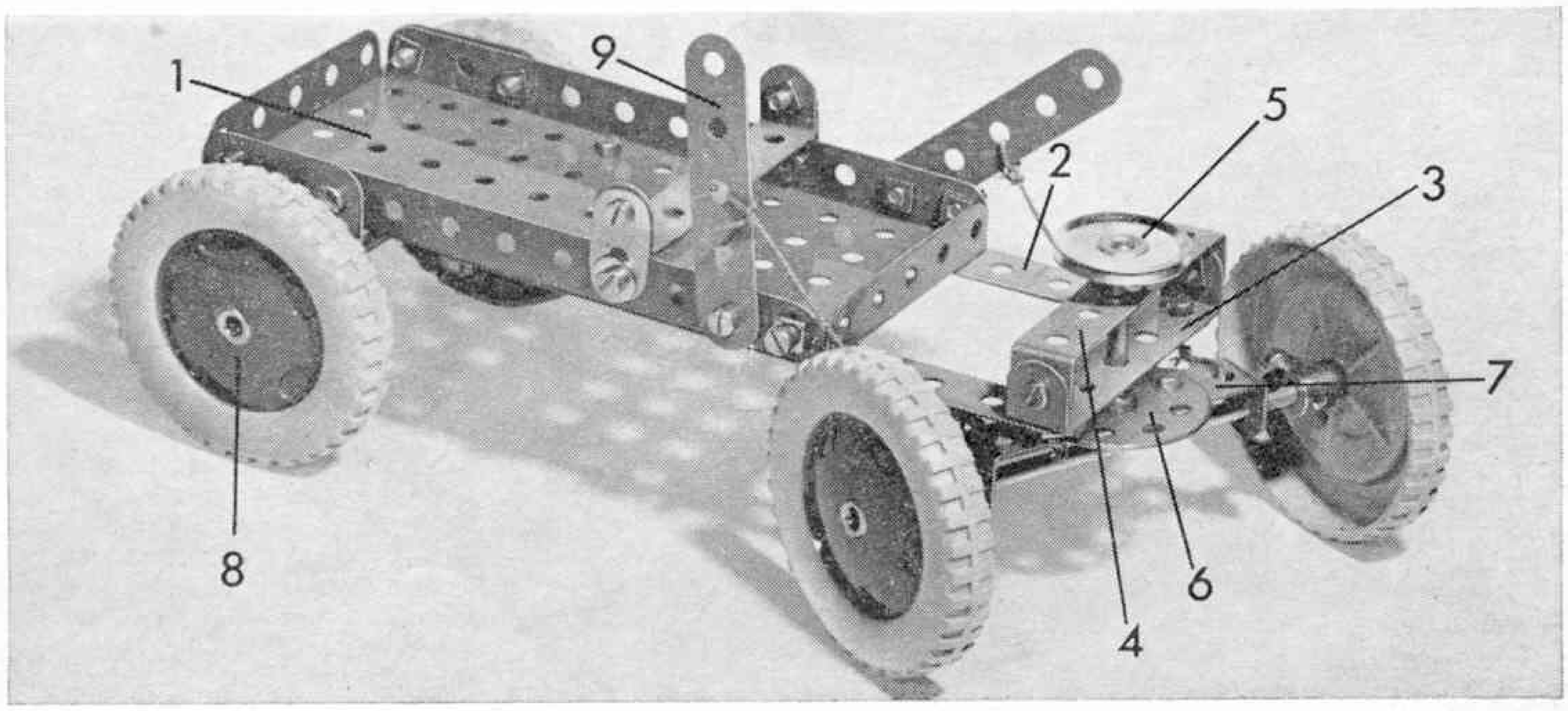
Bolted to the Bush Wheel is a third $2\frac{1}{2}$ in. by $\frac{1}{2}$ in. Double Angle Strip 7, in which a $4\frac{1}{2}$ in. Rod is held by Spring Clips. Mounted on the ends of this Rod are $2\frac{1}{2}$ in. Road Wheels, while a further two $2\frac{1}{2}$ in. Road Wheels 8 are mounted on a $3\frac{1}{2}$ in. Rod, journalled in Flat Trunnions fixed to the other end of the Flanged Plate. Steering handles are provided by two $2\frac{1}{2}$ in. Strips 9, lock-nutted to the side flanges of Plate 1 and connected to Double Angle Strip 7 by lengths of Cord. Bolts fixed by two Nuts in the flanges of Plate 1 act as 'stops' for the steering handles. Lastly, a seat is represented by a fourth $2\frac{1}{2}$ in. by $\frac{1}{2}$ in. Double Angle Strip, attached to the Flanged Plate by Fishplates.

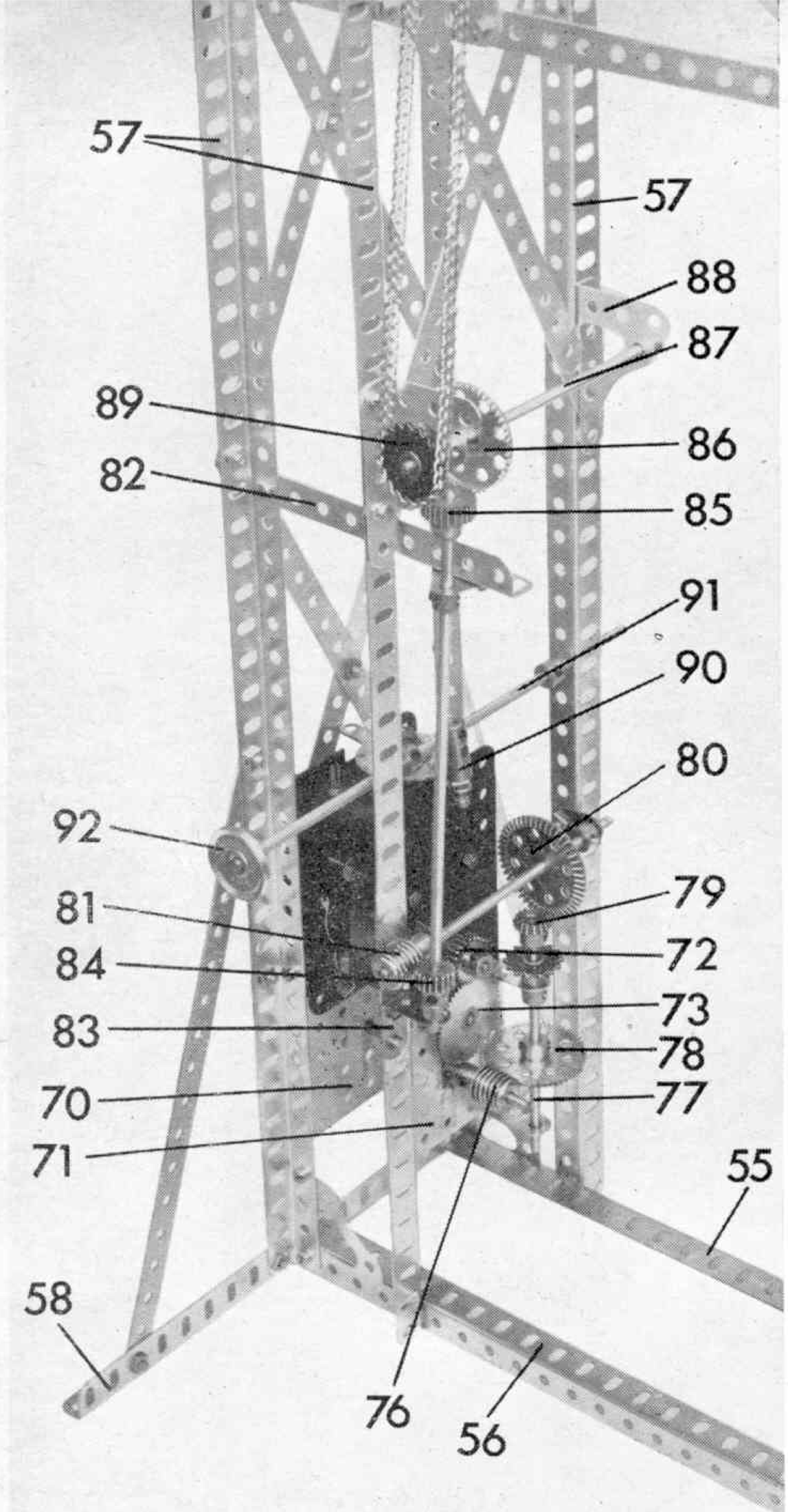
PARTS REQUIRED

2 of No. 2	1 of No. 22	1 of No. 40
2 of No. 5	1 of No. 24	4 of No. 48a
2 of No. 10	2 of No. 35	1 of No. 52
1 of No. 5a	26 of No. 37a	4 of No. 187
1 of No. 16	22 of No. 37b	
1 of No. 18a	4 of No. 38	

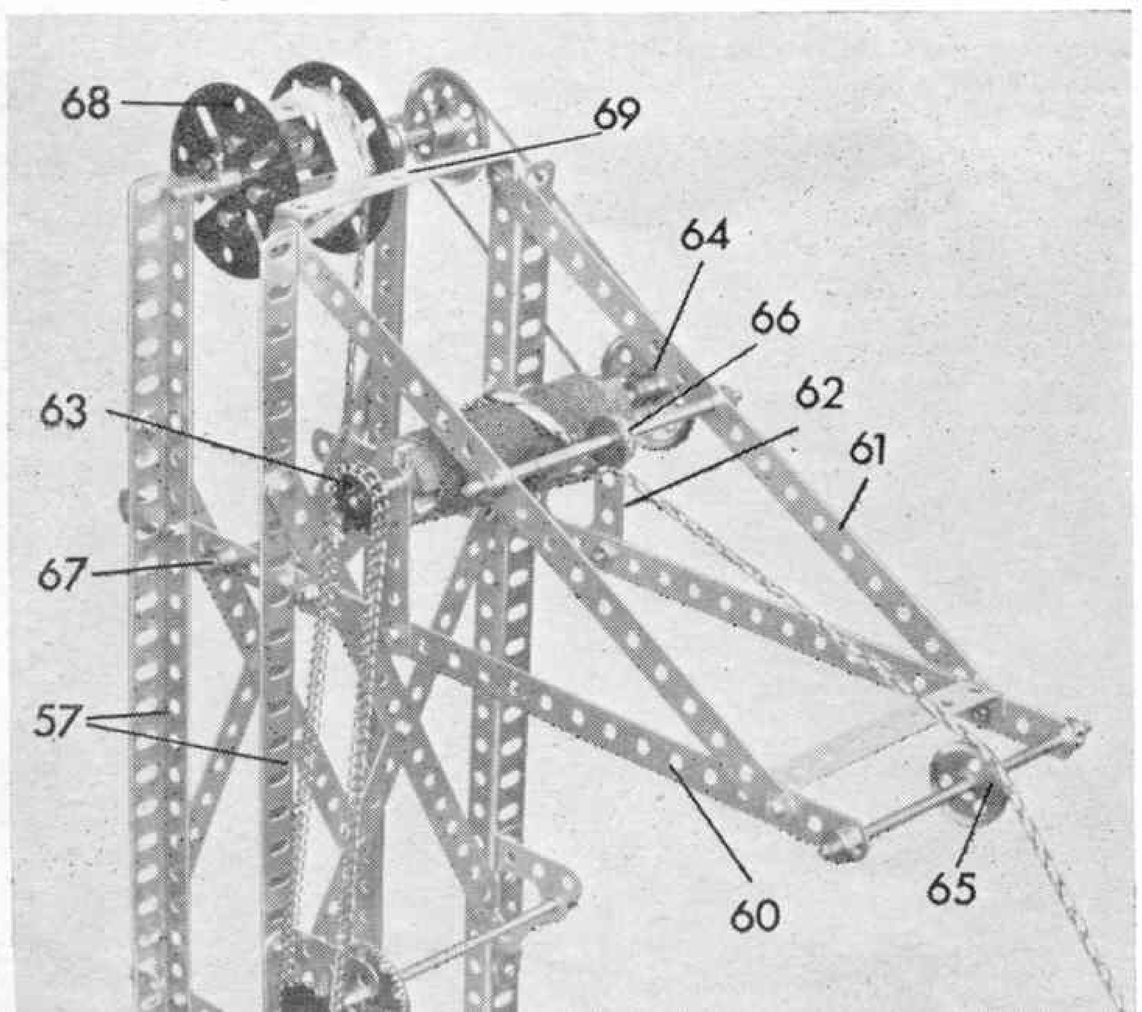


Underside of the truck, showing the ingenious steering and braking systems. Below: the 'Meccano Coaster' is steered by two levers instead of a conventional wheel—an interesting vehicle to drive, no doubt



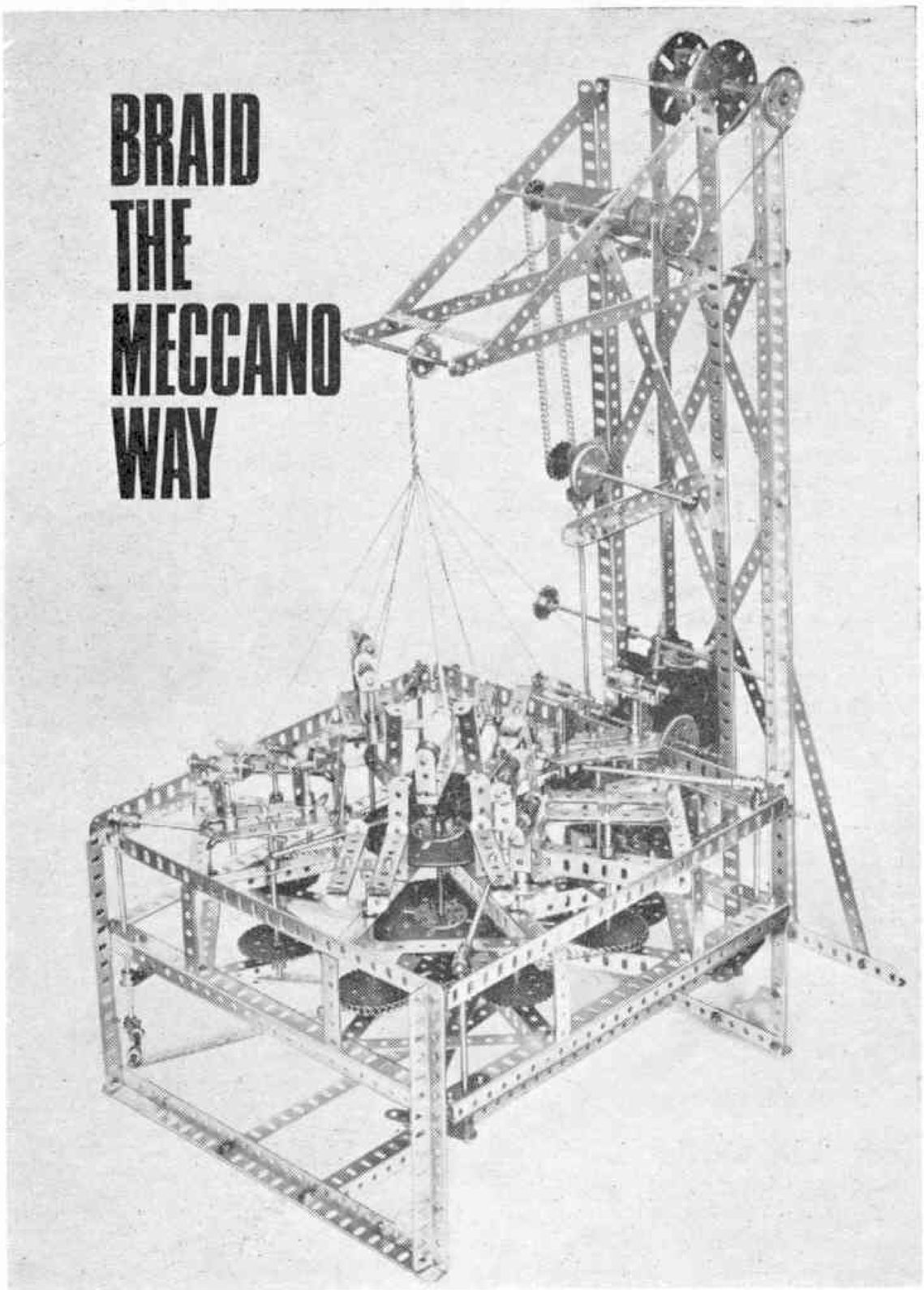


The lower portion of the take-up framework, including the Motor and drive gearing



A view showing the upper portion of the take-up framework

BRAID THE MECCANO WAY



IN the first part of the building instructions for the Meccano Braiding Machine featured last month, I described construction of the main framework, the thread carriers, their slides and the transferring mechanism which moves the carriers from one slide to another. All that remains to be built is the take-up framework, incorporating the Motor and the main drive gearing for both the take-up mechanism and the braiding operation mechanism. Before beginning this, however, it is advisable to set the timing of the various movements involved in the actual braiding operation. The correct timing of these movements is absolutely essential for the success of the model, therefore great care must be exercised.

Taking the section of the model completed last month, rotate Sprocket Wheel 30 in a clockwise direction until all the carrier slides are facing the centre of the model. By turning a further distance of one tooth, studded Bush Wheel 27 should engage with studded Bush Wheel 37. Just before adjacent carrier slides are in line with each other, the outside transferring levers held in Couplings 47 should begin to move taking the thread carriers or 'carrier heads' across from one carrier slide to the other when the 'Vs' in the slides are exactly opposite each other (see diagrams 1 and 2). With the Sprocket Wheel being further rotated the 'spring' in the Flexible Coupling Unit should cause the transferring levers to follow the carrier heads until they are right 'home' in the slides.

When the third Bolt in Bush Wheel 27 is engaging with Bush Wheel 37, the first Bolt in Bush Wheel 28 should engage with the Bolts in Bush Wheel 33. This will give the correct timing for the inside transferring levers. Remember that the carrier heads must move only when the respective slides are opposite each other and note that the outside transferring levers must bear against Rods 10 and 11 after each movement. It is advisable to oil the carrier heads and slides to reduce the danger of the heads binding in the slides.

Take-up Framework

Two 18½ in. Angle Girders 55 and 56 are now bolted as shown between Angle Girders 8, then four 24½ in. Angle Girders 57 are secured to these at right angles, with Corner Gussets again providing rigidity. Secured between the outer two Angle Girders 57 is a 12½ in. Angle Girder 58, braced by 9½ in Strips, while Angle Girders 57 are themselves braced, generally, by various 9½ in. Strips, as shown. Inner Girders 57 are connected to square 5 by two 3½ in. Screwed Rods 59. Bolted towards the top of Angle Girders 57 are two 12½ in. Strips 60, also braced by 9½ in. Strips 61. Two Corner Gussets 62 are fixed to Strips 60 to provide bearings for a Wood Roller which should be covered with sand paper. Mounted on the axle of the Roller at opposite ends are a ¾ in. Sprocket Wheel 63 and a 1½ in. Pulley 64.

A 4½ in. Rod carrying a 1 in.

loose Pulley 65 is journalled in the end holes of Strips 60, while a similar Rod carrying a ½ in. loose Pulley 66 is journalled in Strips 61, both being held in place by Collars. Another 4½ in. Rod 67, carrying a ½ in. loose Pulley is journalled in Strips 60 between Angle Girders 57. A drum is now built up from two Face Plates 68, joined by four 1½ in. by ½ in. Double Angle Strips, and is mounted on a 5 in. Rod, held by Collars in the upper end holes of outside Girders 57. A second 1½ in. Pulley is fixed on the end of this Rod and is connected to Pulley 64 by a Driving Band. The upper ends of inner Girders 57, by the way, are joined by a 3½ in. Double Angle Strip 69.

Power Unit

An E15R Electric Motor is mounted on two Angle Girders 57, its sideplates having first been extended by two 2½ in. by 2½ in. Flat Plates 70 and 71. Secured on the Motor output shaft is a ¾ in. Pinion 72 that meshes with a 50-teeth Gear 73 on a 2½ in. Rod, journalled in the Motor sideplates. A second ¾ in. Pinion 74 on the other end of this Rod engages with a second 50-teeth Gear 75 on a 3½ in. Rod, mounted in Flat Plates 70 and 71 and held by a Collar. A Worm 76 is fixed on the inside end of this Rod. Bolted along one edge of Flat Plate 71 is a 2½ in. by 1 in. Double Angle Strip, the lugs of which provide bearings for a 4 in. Rod 77. Secured on this Rod are a 57-teeth Gear 78, in mesh with Worm 76, a Collar, a ¾ in. Sprocket Wheel and a ½ in. Bevel Gear 79. In mesh with Bevel Gear 79 is a 1½ in. Bevel Gear 80 on a 5 in. Rod which is journalled in two Fishplates bolted to Girder 57. A Collar and a Worm 81 hold the Rod in place. The ¾ in. Sprocket Wheel on Rod 77 is connected by Chain to Sprocket Wheel 29.

Bolted to two side Girders 57 is a 4½ in. Angle Girder 82, to which a 1 in. Triangular Plate is fixed. A 1 in. by 1 in. Angle Bracket 83 is bolted to inside Girder 57, on the same side, then an 8 in. Rod is journalled in this and in the apex hole of the Triangular Plate, Collars holding it in position. A ½ in. Pinion 84 on the Rod engages with Worm 81, while a ¾ in. Pinion 85, fixed on its upper end, engages with a 1½ in. Contrate Wheel 86, mounted on a 5 in. Rod 87. This Rod is held by Collars in left-hand and right-hand Flanged Brackets 88, bolted to Girders 57. Also mounted on the Rod is a 1 in. Sprocket Wheel 89 that is connected by Chain to Sprocket Wheel 63.

A start stop lever for the Motor is obtained by loosely fixing a Threaded Coupling 90 to one arm of the Motor switch by a Nut and Bolt. An 8 in. Rod 91 is then passed through inside Girders 57 and is fixed in the upper transverse smooth bore of the Threaded Coupling. A 1 in. Pulley with boss 92 is mounted on the end of the Rod. It is very important that the model should operate in one direction only—the Sprocket Chain connecting Sprocket Wheels 13 should move clockwise. Collars are, therefore, added to Rod 91 to provide "stops" preventing the Motor from being reversed by mistake.

Braiding Preparation

Providing that all the building instructions have been followed, you should now have a complete braiding machine, but without the necessary cord and thread. A fairly thick central cord is required, and this can be provided by heavy string. The outside threads, however, should be pretty fine and we recommend Sylko No. 20.

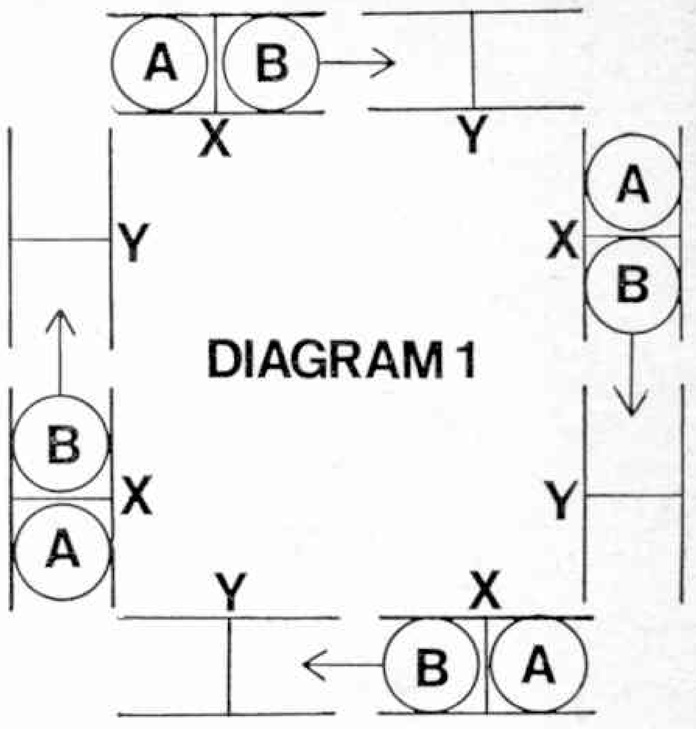
To prepare the model, the central drum composed of the 3 in. Rod, carrying Pulleys 21 and 22, is wound with the thick cord, while each of the small drums in the carrier heads are wound with fine thread. All eight fine threads, together with the central cord, are now taken over Pulley 65, over and around the Wood Roller, over and around the ½ in. Pulley 66, under and around the Pulley on Rod 67 to be finally attached to the axle of the take-up drum 68.

When the model is in operation you will see that the eight carrier heads work in two groups of four, each group moving only when one of the two square patterns (see diagrams 1 and 2) are formed by the carrier slides. The sides of the pattern shown in diagram 1 should be parallel to the respective 12½ in. Angle Girders in the main framework while the sides of the pattern shown in diagram 2 should be at angles of 45 degrees to the framework Girders. I must again stress that exact positioning of the slides is essential, therefore, I suggest that you make frequent checks with this in mind.

by Spanner

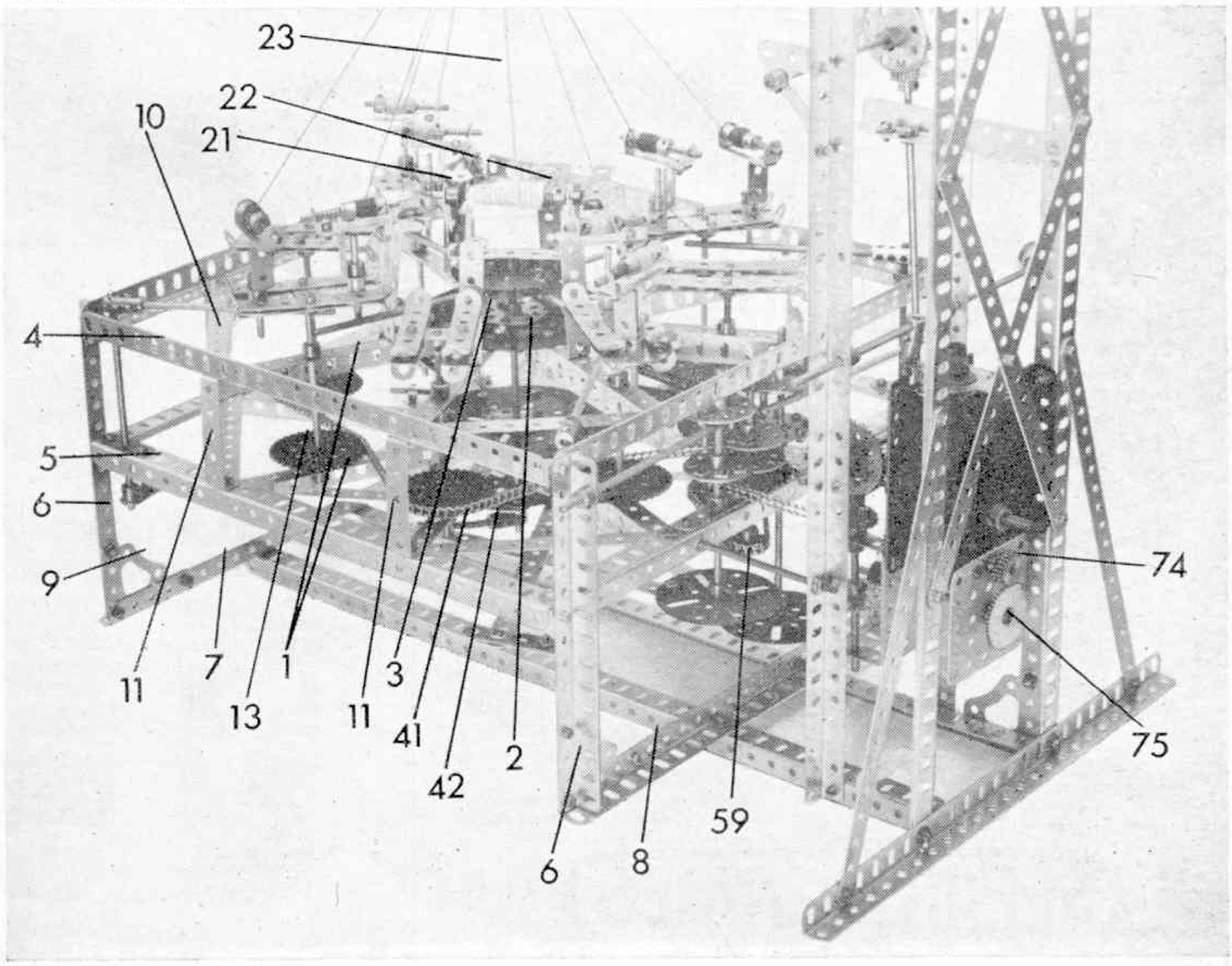
Parts required:-

2 of No. 1	1 of No. 15b	240 of No. 37a	8 of No. 95
10 of No. 1a	2 of No. 16	194 of No. 37b	2 of No. 95a
3 of No. 1b	1 of No. 16a	12 of No. 38	1 of No. 96
24 of No. 2	1 of No. 16b	2 of No. 43	3 of No. 96a
1 of No. 2a	16 of No. 17	1 of No. 46	1 of No. 106
32 of No. 3	2 of No. 21	1 of No. 47	10 of No. 180
4 of No. 5	1 of No. 22	12 of No. 48	4 of No. 109
12 of No. 6a	1 of No. 22a	14 of No. 48a	2 of No. 111a
4 of No. 7	2 of No. 23	2 of No. 48b	2 of No. 111c
2 of No. 7a	2 of No. 23a	2 of No. 57d	4 of No. 115
11 of No. 8	14 of No. 24	78 of No. 59	8 of No. 120b
4 of No. 8b	2 of No. 24a	4 of No. 62	8 of No. 124
16 of No. 9	3 of No. 25	8 of No. 62b	1 of No. 133a
1 of No. 9a	1 of No. 26	5 of No. 63	8 of No. 136
3 of No. 10	2 of No. 27	1 of No. 63c	1 of No. 139
1 of No. 12a	1 of No. 27a	24 of No. 69	1 of No. 139a
1 of No. 13a	1 of No. 28	16 of No. 69c	2 of No. 146a
6 of No. 14	1 of No. 30a	2 of No. 72	2 of No. 175
6 of No. 15	1 of No. 30c	2 of No. 80a	1 of No. 186
19 of No. 15a	2 of No. 32	2 of No. 94	1 of No. 186c
			1 E15R Electric Motor



A rear view of the Braiding Machine showing the method of securing the take-up framework to the main framework. Most of the numbers appearing on the picture were referred to in last month's article

These diagrams show the two main patterns formed by the carrier slides when the model is in operation. As slides X and Y are forming the pattern shown in diagram 1, the carrier heads A and B must be in the positions shown. At the moment the correct pattern is formed carrier heads B in slides X are moved by the transferring levers into slides Y, as shown in diagram 2. When the pattern shown in diagram 2 is formed by the carrier slides, carrier heads A in slides X are moved into slides Y, then the cycle is repeated



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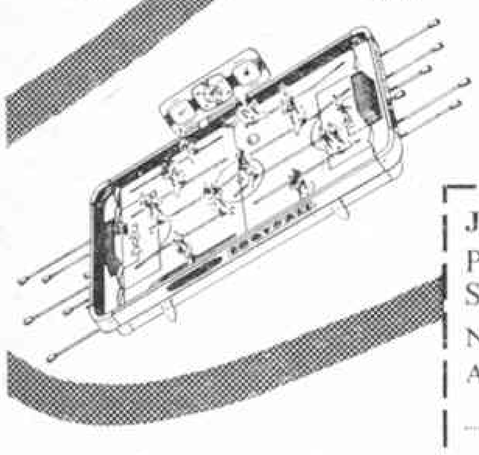

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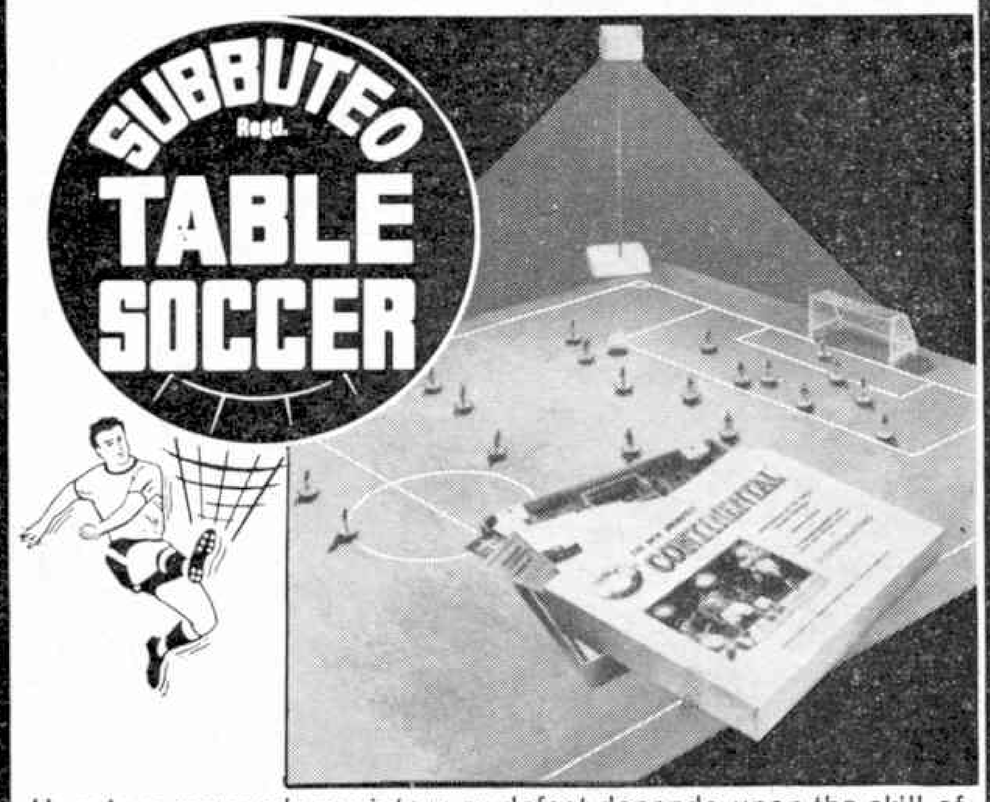

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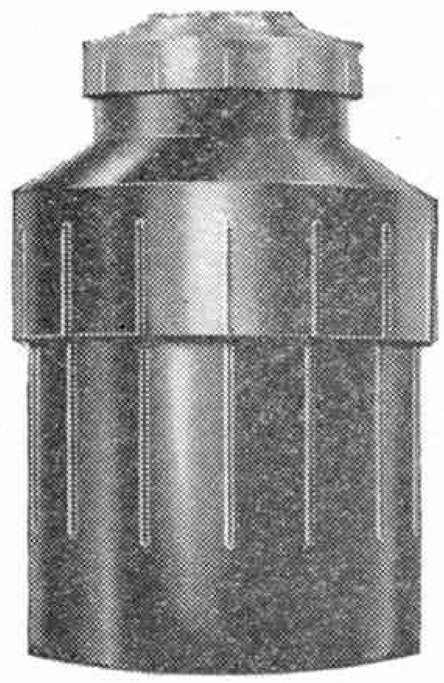

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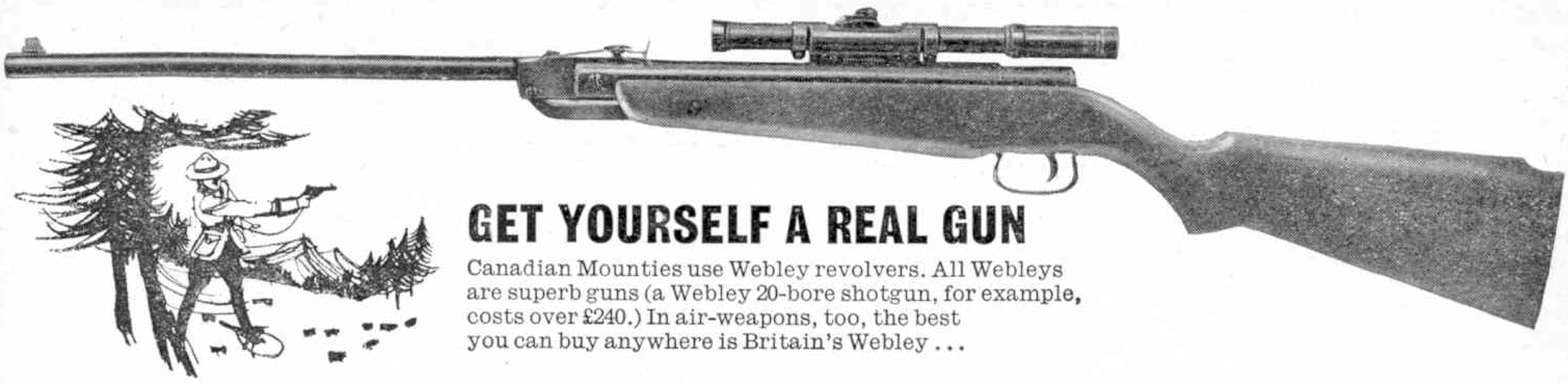

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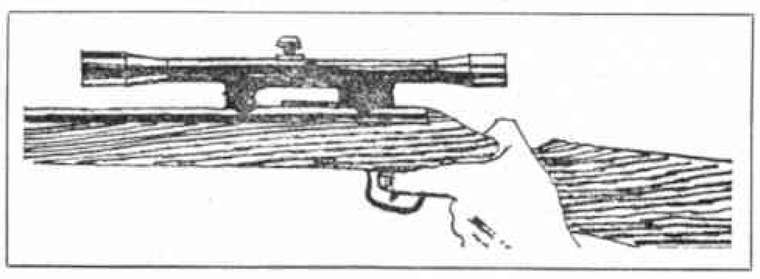

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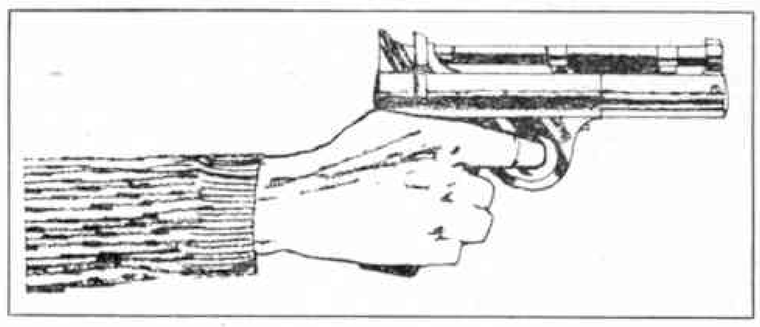

Shoot with safety Never point a gun, unloaded or not, at anyone. Never handle a gun before checking that it's unloaded. Always carry it so the muzzle is fully under your control. Never leave it where people younger or less responsible than you can meddle with it. Never leave a loaded gun unattended. Always make sure no-one is behind your target before opening fire.

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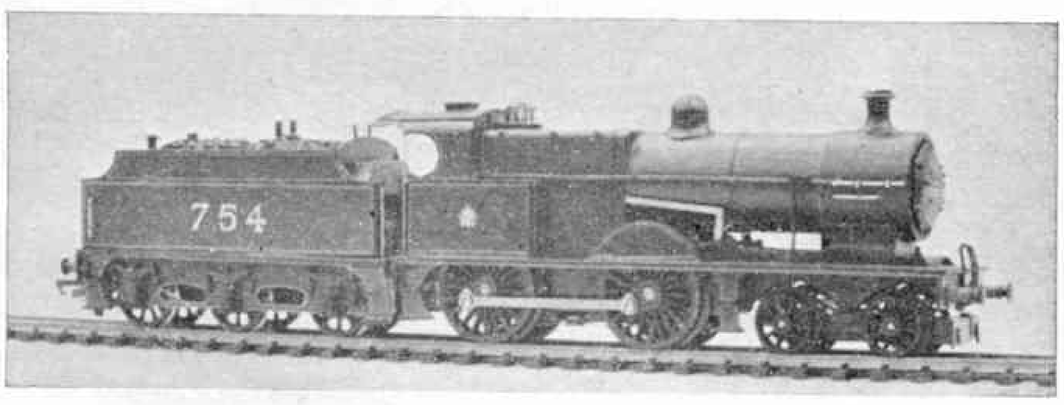

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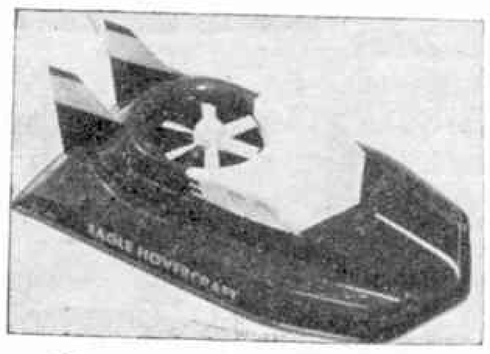

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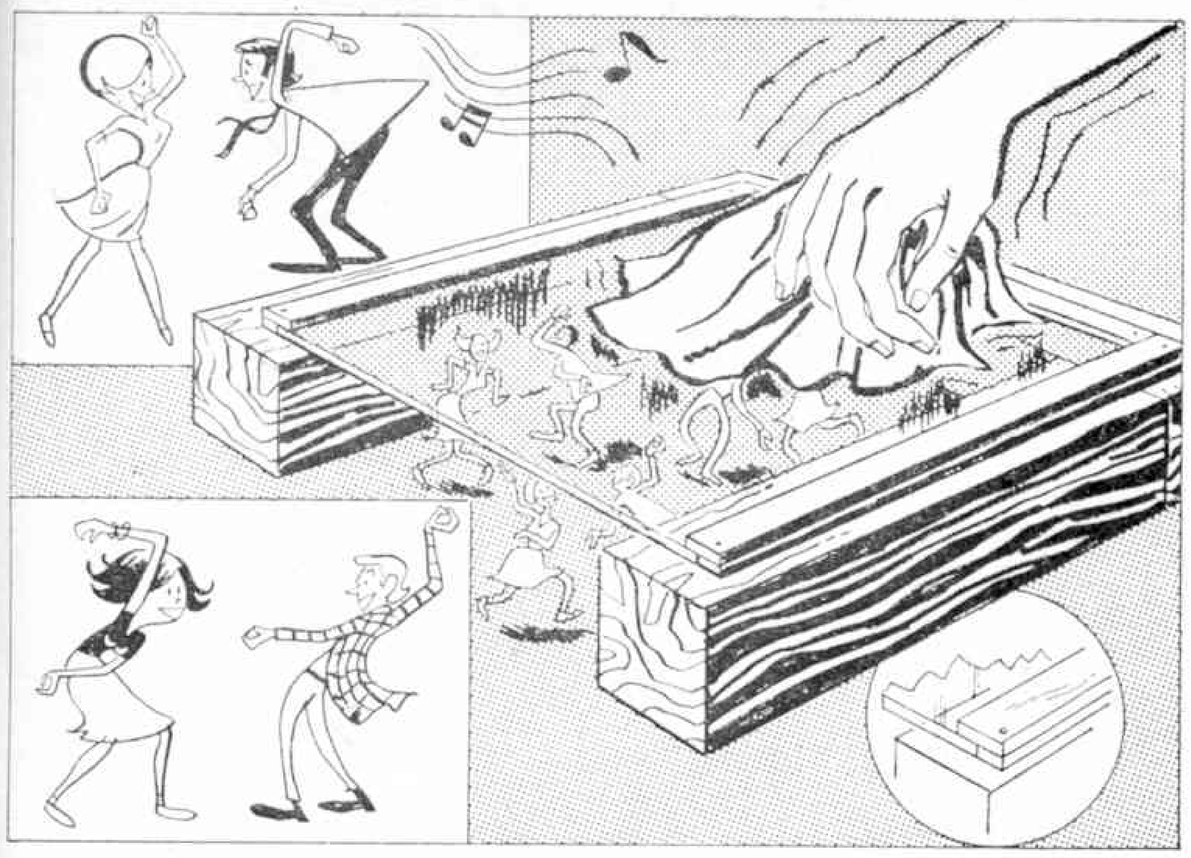


ROCK AND ROLL UNDER GLASS

ONE WAY to create a stir among friends is to indicate that you are about to put on a rock and roll exhibition—under glass! They'll be surprised when you keep your word with the odd-looking gadget above. Here's the lowdown on assembly and operation:

Materials: a pane of window glass (no special size); scraps of timber, including thin strips with which to make a frame; tissue paper; a silk handkerchief.

Assembly: Construct a three-sided frame with slotted top in which to house the pane of glass.

Cut 'dancers' (use patterns provided at left, if you like) from tissue paper.

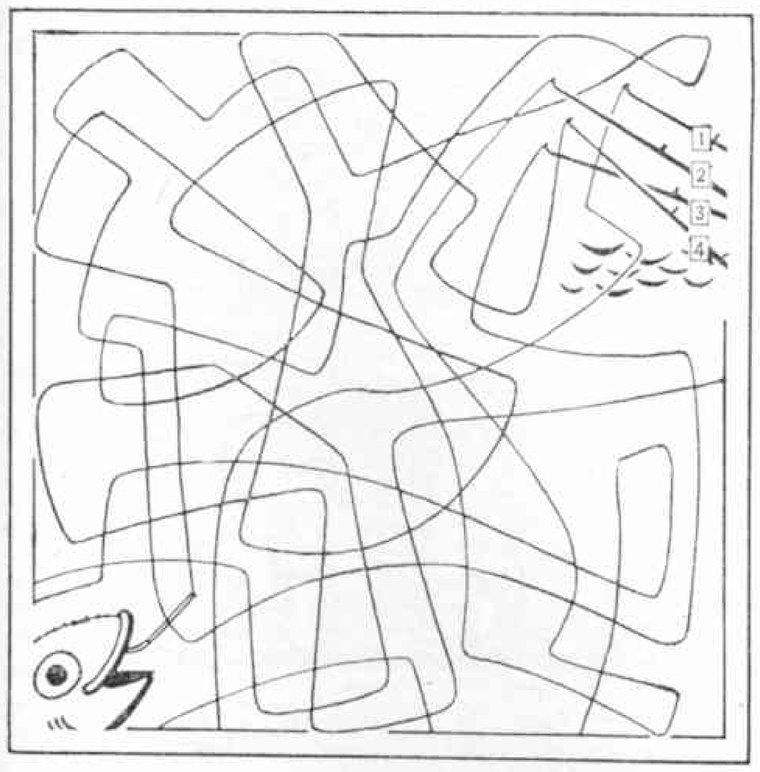
Place 'dancers' under pane and rub glass briskly with silk handkerchief (not too hard, of course, or pane may break).

Watch how 'dancers' rock and roll! Yeah, yeah!

FUN & GAMES

WHICH ANGLER CATCHES THE FISH?

WHICH fisherman will catch the fish below? The angler holding pole 1, 2, 3 or 4? Take a guess, then see if you can trace through twists and turns of individual lines to make the lucky catch. Reversing direction—that is, starting with fish and tracing line back to pole, is not fair, of course. By a curious coincidence, two of the poles are linked together and are thus eliminated from the competition. Which two? We'll let you decide.



FORE AND AFT?

TO each word below, add a letter at each end (except S) so that another word is formed. For example, to expand the word 'over', add C and T to form 'covert'. How quickly can you complete the changeover of all the words in the following list?

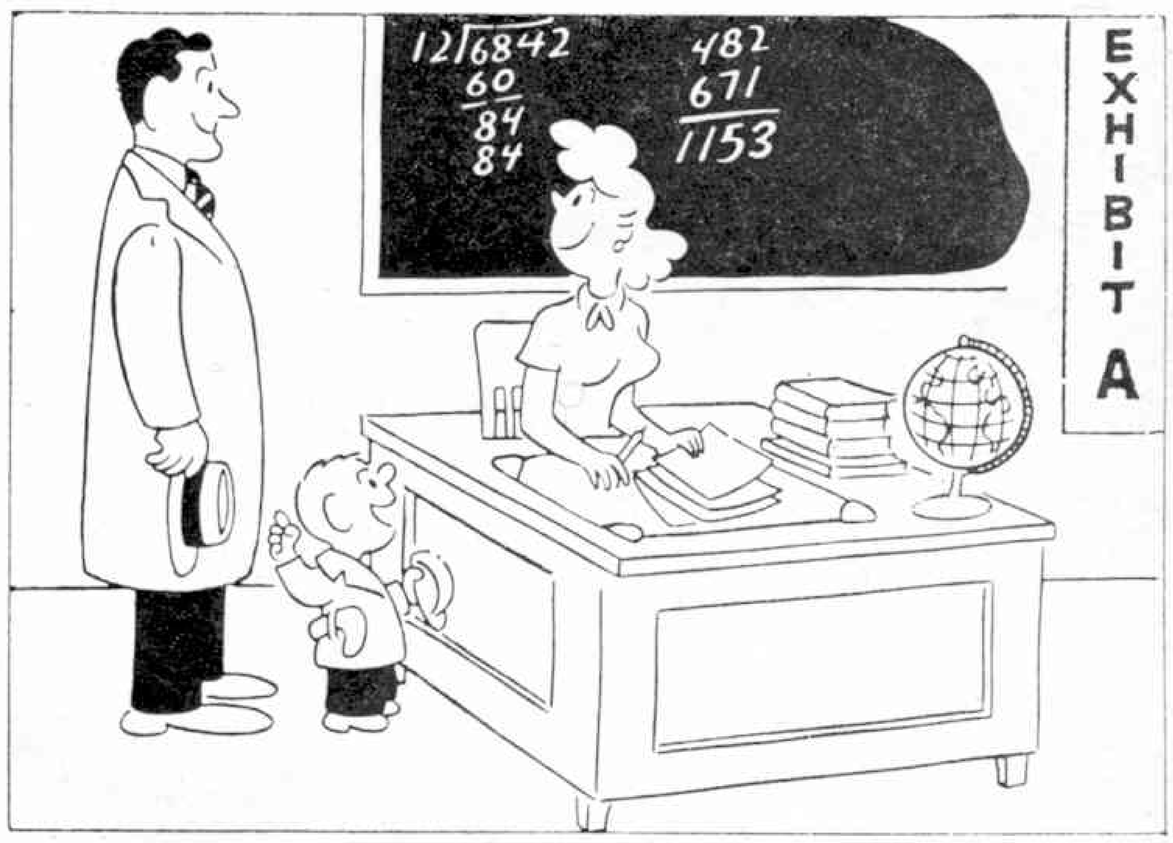
1. —OVER—
2. —LANE —
3. —AMEN—
4. —RING—
5. —RITE—
6. —RISK—
7. —LUNG—
8. —RANG —
9. —AIDE—
10. —REAM—
11. —OARS—
12. —ADAM—
13. —RACE—
14. —RAVE—
15. —HANG—
16. —EVER—
17. —LOSE—

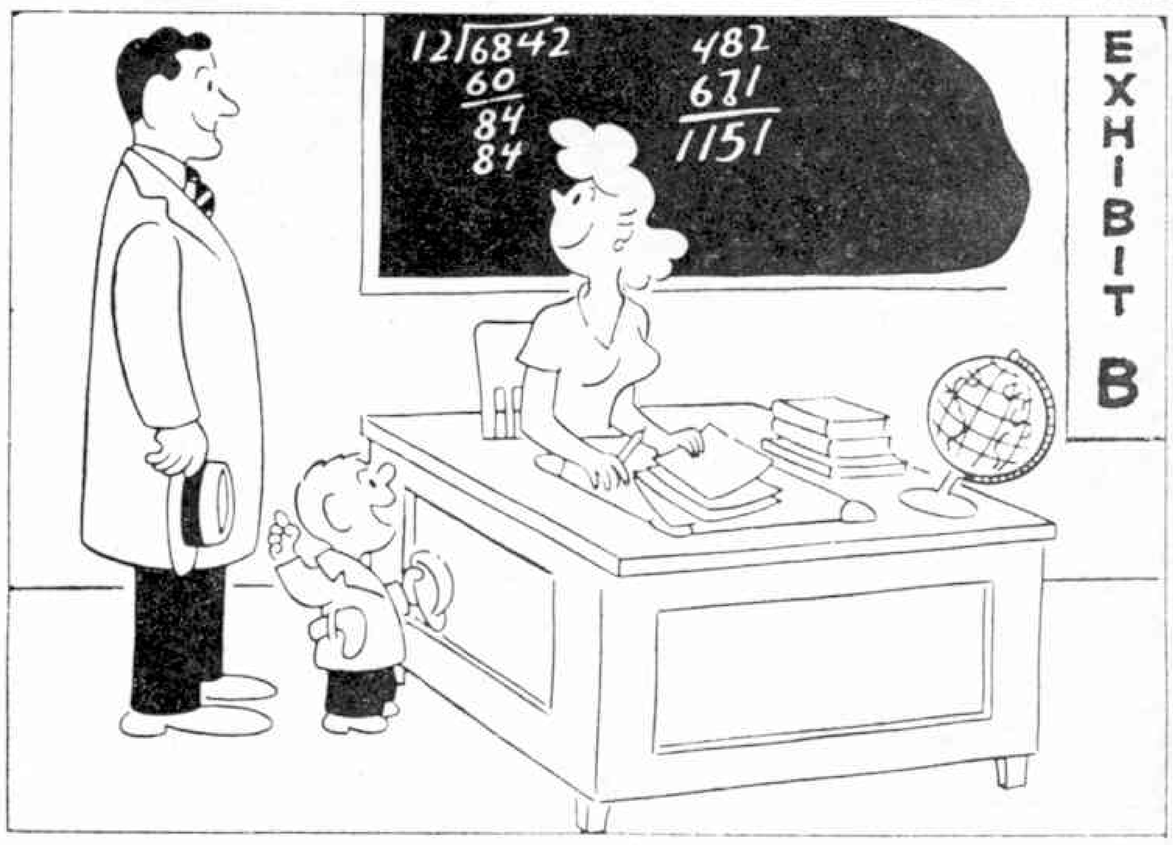
Answer: One possible answer for each is—covert, planet, lament, cringe, writer, frisky, plunge, orange, maiden, dreamt, coarse, madame, tracer, travel, change, revert, closet.

SMART GALLERY

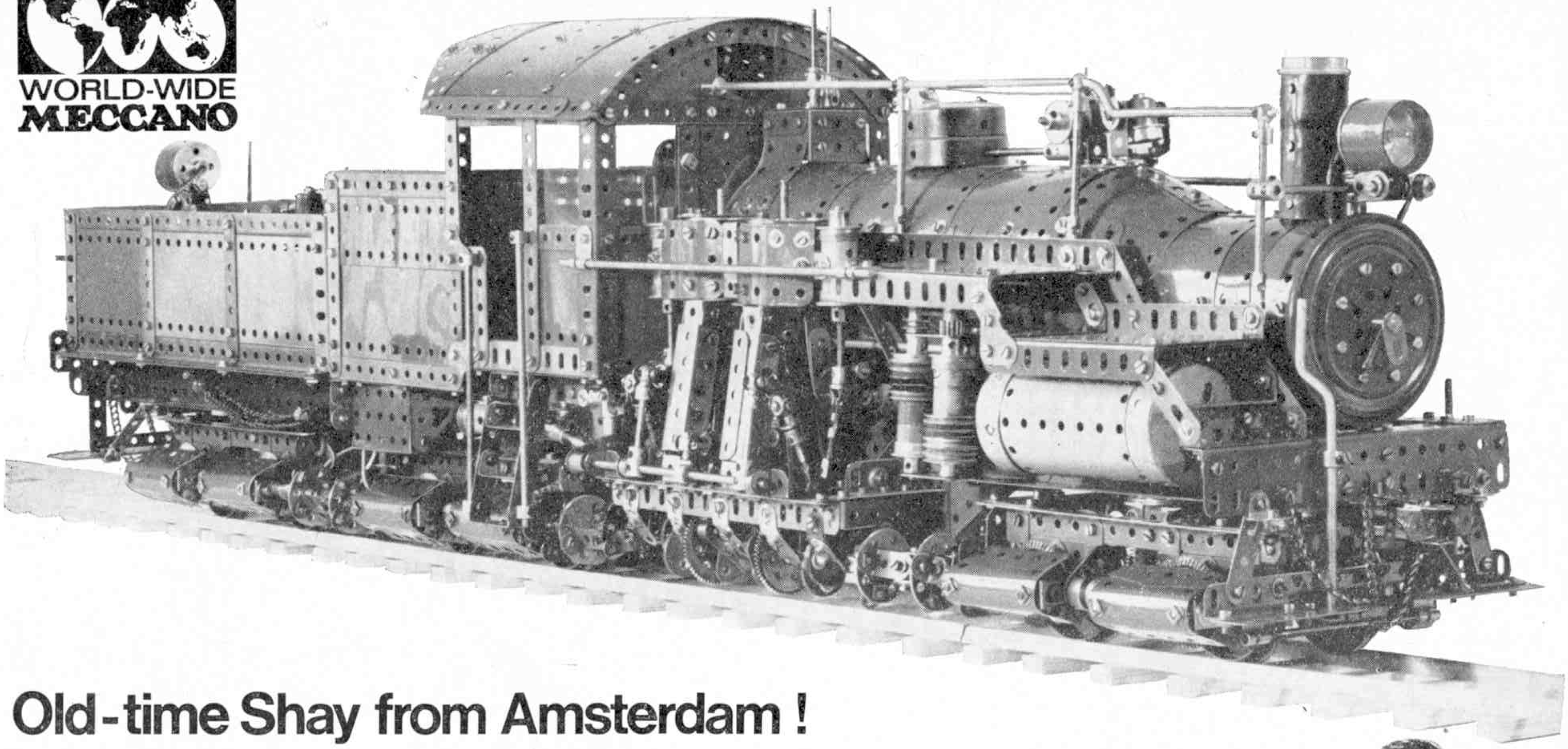
USE YOUR WITS and eyes to find a single error of factual circumstance in both drawings below, and then look for six differences in detail between Exhibit A and Exhibit B. Solution below.

Factual discrepancy: Teacher is surrounded by desk. Detail differences: 1. Neckline is different. 2. Book is missing. 3. Globe's position is altered. 4. Desk blotter is smaller. 5. Addition is changed. 6. Man's coat is shorter.





WORLD-WIDE
MECCANO



Old-time Shay from Amsterdam !

This marvellous working model of an American Shay locomotive was made by a Dutch enthusiast. It's 45" long—1/16th scale—and driven by two Meccano electric motors fitted inside the firebox. The Shay engine—1880 to 1945—was (and in many places still is) a favourite workhorse of logging companies, contractors and mountain railways in places as far apart as Mexico and China.

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Please send photographs and descriptions to Meccano Ltd., Binns Road, Liverpool 13.

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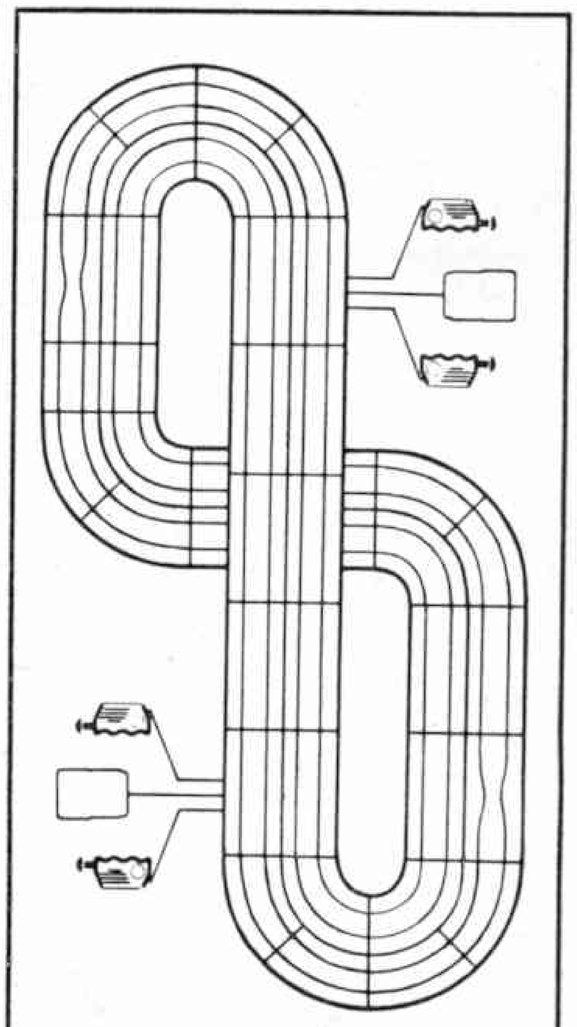
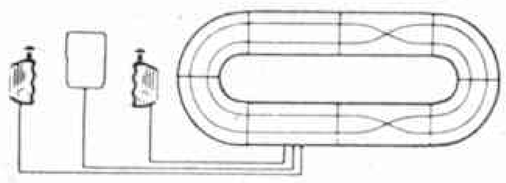
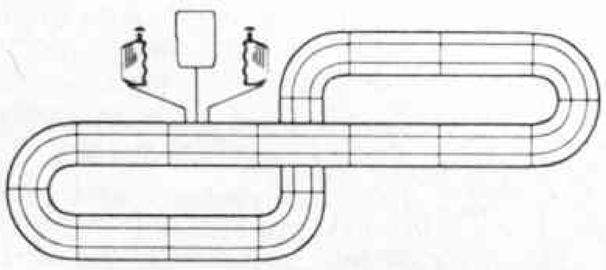


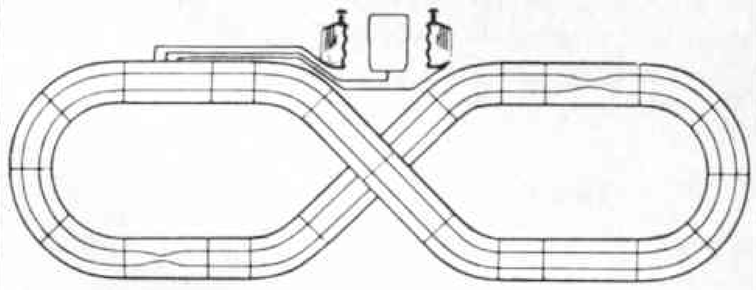
Sets B and C combine to form this 4 lane layout. 28½ ft. of figure-8 track. Area of layout 76″ × 40″.



X.100 Set A. 81/- 6 ft. of track using small radius (Inner) curves and two cross-overs. Area of layout—36″ × 15″.



X.110 Set B. 101/3 12½ ft. of figure-8 track, using small radius (Inner) curves. Area of layout—66″ × 25″.



X.120 Set C. 131/9 16 ft. of figure-8 track, using large radius (Outer) curves. Area of layout—83″ × 25″.

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• Matchbox, Corgi, Dinky, Spot-on collections wanted. Edwards, 1101 Matterhorn, Mobile, Alabama, U.S.A.

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STAMPS PAGE

BY F. E. METCALFE

Say it with stamps

It is rather amusing to notice that the less likely a country is to build and operate things like sputniks, the more certain that country is to produce, or rather have produced for them, stamps which depict such things. For instance, there are those Arabian Sheikdoms which have had some fine 'sputnik' stamps, as has the Tongolaise Togo. And of all unlikely places for launching space rockets, the Maldive Islands, tucked away in the Indian Ocean, they too have had their issue, one of which is illustrated. Of course, it is you, dear reader, they are thinking about, or rather your spare cash. But to be quite candid, interested as we may be in rockets, I don't think we particularly extend that liking to bits of paper, which in these cases have very little real meaning. In fact they are hardly postage stamps at all, as far as the object behind their production is concerned. Still, they do get some very fine designers for the job.

'WHO'

What are all those WHO's about? What are all those stamps which many countries issued early in July, all showing the letters WHO? Well for those who do not know, and several have enquired, a new headquarters building to house the World Health Organisation (WHO for short) was opened in Geneva. The management of that institution asked the various countries concerned, if they would issue a special set of stamps, to mark the event, and provide publicity, to help raise funds. Many countries responded. Our own Post Office was too busy with the 'World Cup' issue to be able to follow suit. I think it was probably 'Football' issues which prevented several other countries having a 'WHO' set. But one which joined the band was Western Samoa. There were four stamps, all of which depicted the new building. Quite a nice set.

Shifts

No, I am not referring to those now fashionable ladies' dresses, but to equally popular varieties, which are cropping up all the time whenever a new special issue of British stamps appears. I have had several such items shown to me lately. Where the designs differ a bit from the normal, and where the difference is slight, the owners of the stamps are always very disappointed when I have to tell them that their treasures are not very valuable. Of course, it is simple to see what has happened. The stamps are printed in more than one colour and, as far as British stamps are concerned, by more than one operation. When one of the impressions does not register exactly as intended, we get these shifts, as collectors call them. Although slight shifts are not scarce, and thus of little monetary value, those which show very faulty printing (such as a footballer, with a white shirt, as an actual case in point) are much sought after. Keep your eyes open, but do not think that a slight shift is an important find. It is just merely a nice little variety for the specialist.

'Health' stamps

With so many countries producing stamps, mostly to tempt collectors, the latter are getting very blasé about the whole business, and very few of these stamps can be said to be really welcome. But there is one issue which is certainly an exception to that comment. That exception is the New Zealand 'Health' stamp set, along with the two miniature sheets of the same stamps, which has been appearing, with different designs of course, since 1931 (and that first pair of stamps, known as the 'Smiling Boy' issue, for such a happy looking youth is depicted, brings quite a few pounds today). The 1966 issue illustrates two New Zealand birds, and as usual the stamps will sell by the million, so there is no chance of these ever competing in price with the first pair, but the designs are delightful, the cause which benefits from the surcharge a good one, so blocks of four, plus the two miniature sheets, will certainly go into my collection and, no doubt, lots of M.M. collectors will be following suit, such is the popularity of these stamps.

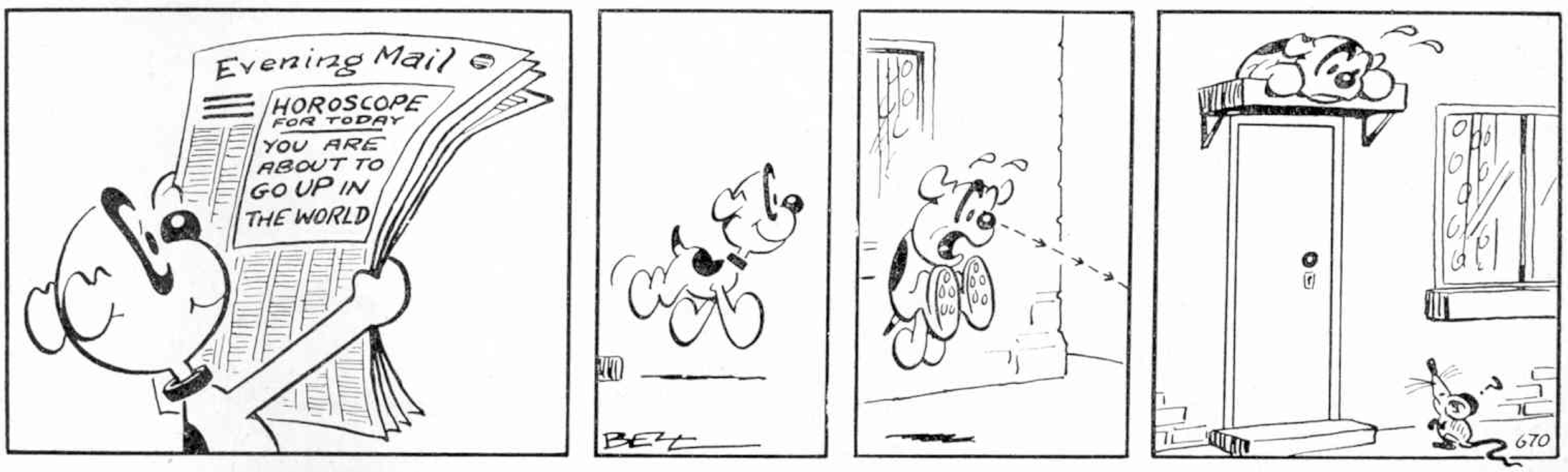
Overprints

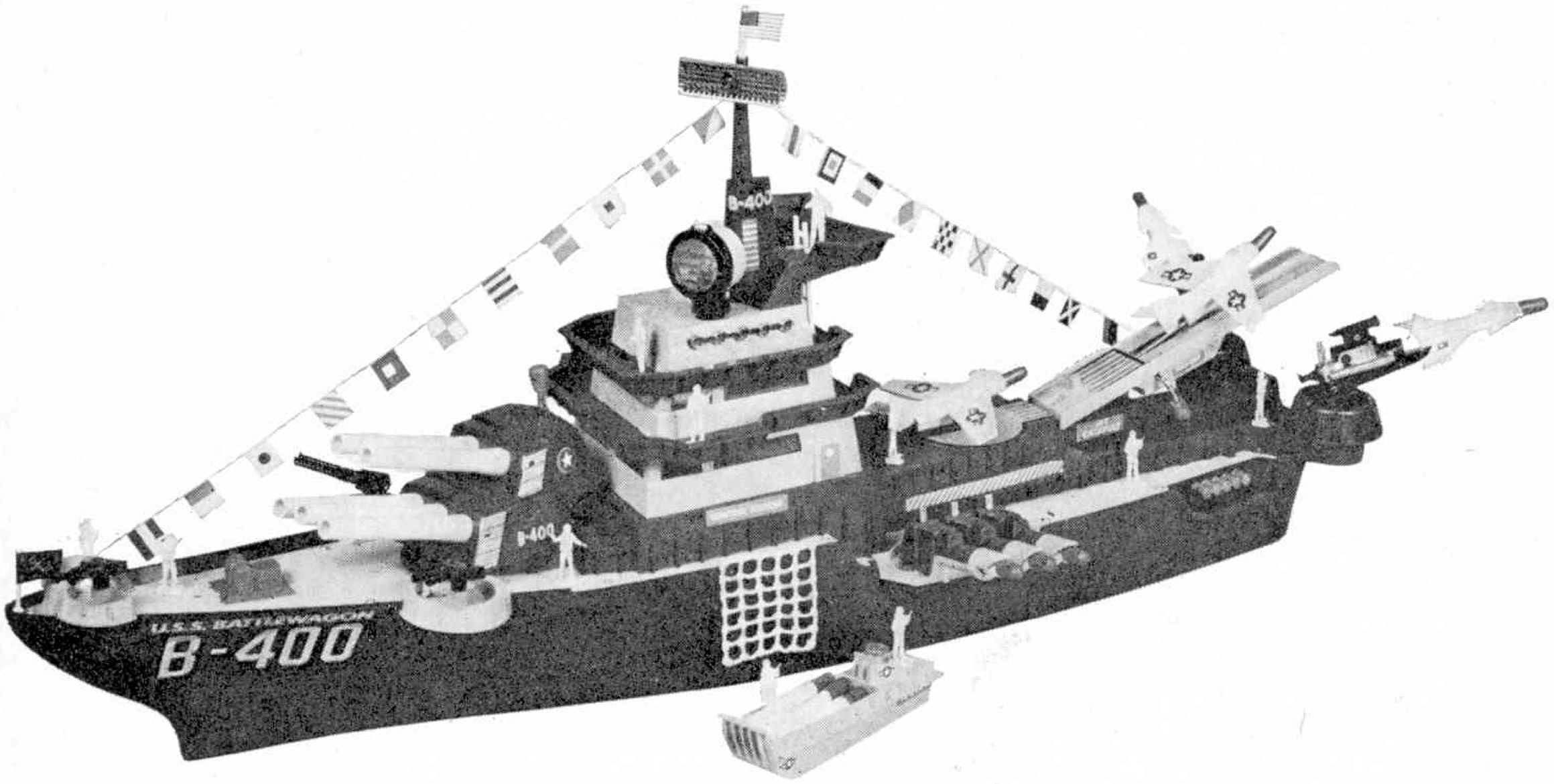
Recently, the Aden States of Kathiri and Qu'aiti issued sets of their current stamp with overprints. Those I suggest you leave alone. But Bahamas, British Guiana, British Solomon Is. and Gilbert and Ellice have also overprinted their current sets, and any of these stamps I would suggest are worth buying. Unfortunately they go up to anything from 16s. to 21s. as top values, so complete sets are costly, and these may be a bit above what one wants to pay. Very well, sets of up to 1s. (or equivalent) are well worth having, particularly postally used. So don't miss any that come your way.

The tip of the month

Malaysia is always in the news, and this publicity may account for the popularity of its stamps, and the present delightful issues of Malaysia and the States, which now include Sabah and Sarawak, will also help to increase the vogue for that Far Eastern territory. There are eight stamps which run from 25c. to $10 which all the thirteen States use in common (so here the postmarks are worth going after, particularly Sabah and Sarawak, which now form part of the union) and then each State has its own seven stamps with a face value from 1c. to 20c. In all, a wonderful array, and you can make a nice show of used, for very little money. Some of the stamps are quite scarce really, but when you do come across them, they are only likely to cost coppers. So what about a little Malaysian and States collection? Used for preference. They will provide an awful lot of fun, and as already hinted, an inexpensive frolic. Of course, if the pocket allows, you can go in for mint as well. The sets for the States will not be expensive, whilst they are current. But how long will that be? Most countries nowadays only have definitive stamps in name.

CHIPPER





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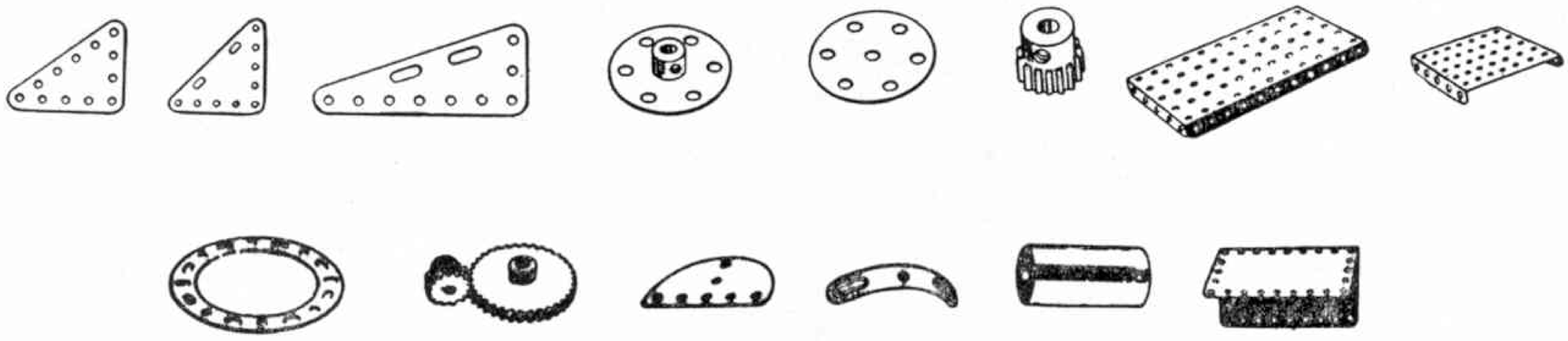

Dealers who specialise in Meccano spare parts

Listed below are some of the dealers who sell Meccano accessories and spare parts. This is intended to aid enthusiasts—and there are many of them—who constantly require additional spare parts for their Sets. All dealers can, of course, order Meccano spare parts for their customers, but those listed here are among our spare part specialists.

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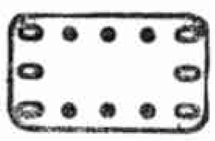

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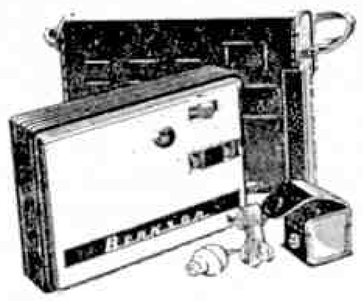

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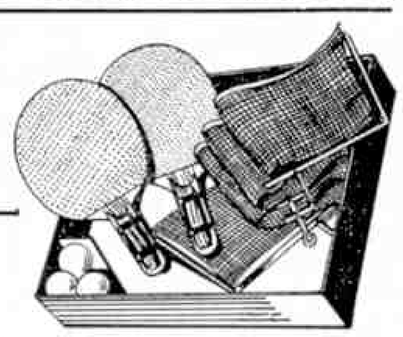

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- ☐ King Charles
- ☐ Malins
- ☐ Meccano
- ☐ Mellor
- ☐ Miniature Auto
- ☐ Minic
- ☐ Newnes
- ☐ Peco
- ☐ Playcraft Railways
- ☐ Railway Modeller
- ☐ Reardon Smith
- ☐ Roland Scott
- ☐ Rovex
- ☐ Royal Navy
- ☐ Scalextric
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- ☐ Champion
- ☐ De Luxe Topper
- ☐ Enterprise
- ☐ Enfield
- ☐ Gamages
- ☐ Harbutts
- ☐ Hinton
- ☐ Humbrol
- ☐ H.M.S. Conway
- ☐ Ian Allen
- ☐ Impy Cars
- ☐ Johnsons of Hendon
- ☐ Keilkraft
- ☐ King Charles
- ☐ Malins
- ☐ Meccano
- ☐ Mellor
- ☐ Miniature Auto
- ☐ Minic
- ☐ Newnes
- ☐ Peco
- ☐ Playcraft Railways
- ☐ Railway Modeller
- ☐ Reardon Smith
- ☐ Roland Scott
- ☐ Rovex
- ☐ Royal Navy
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- ☐ Camera Craft
- ☐ Champion
- ☐ De Luxe Topper
- ☐ Enterprise
- ☐ Enfield
- ☐ Gamages
- ☐ Harbutts
- ☐ Hinton
- ☐ Humbrol
- ☐ H.M.S. Conway
- ☐ Ian Allen
- ☐ Impy Cars
- ☐ Johnsons of Hendon
- ☐ Keilkraft
- ☐ King Charles
- ☐ Malins
- ☐ Meccano
- ☐ Mellor
- ☐ Miniature Auto
- ☐ Minic
- ☐ Newnes
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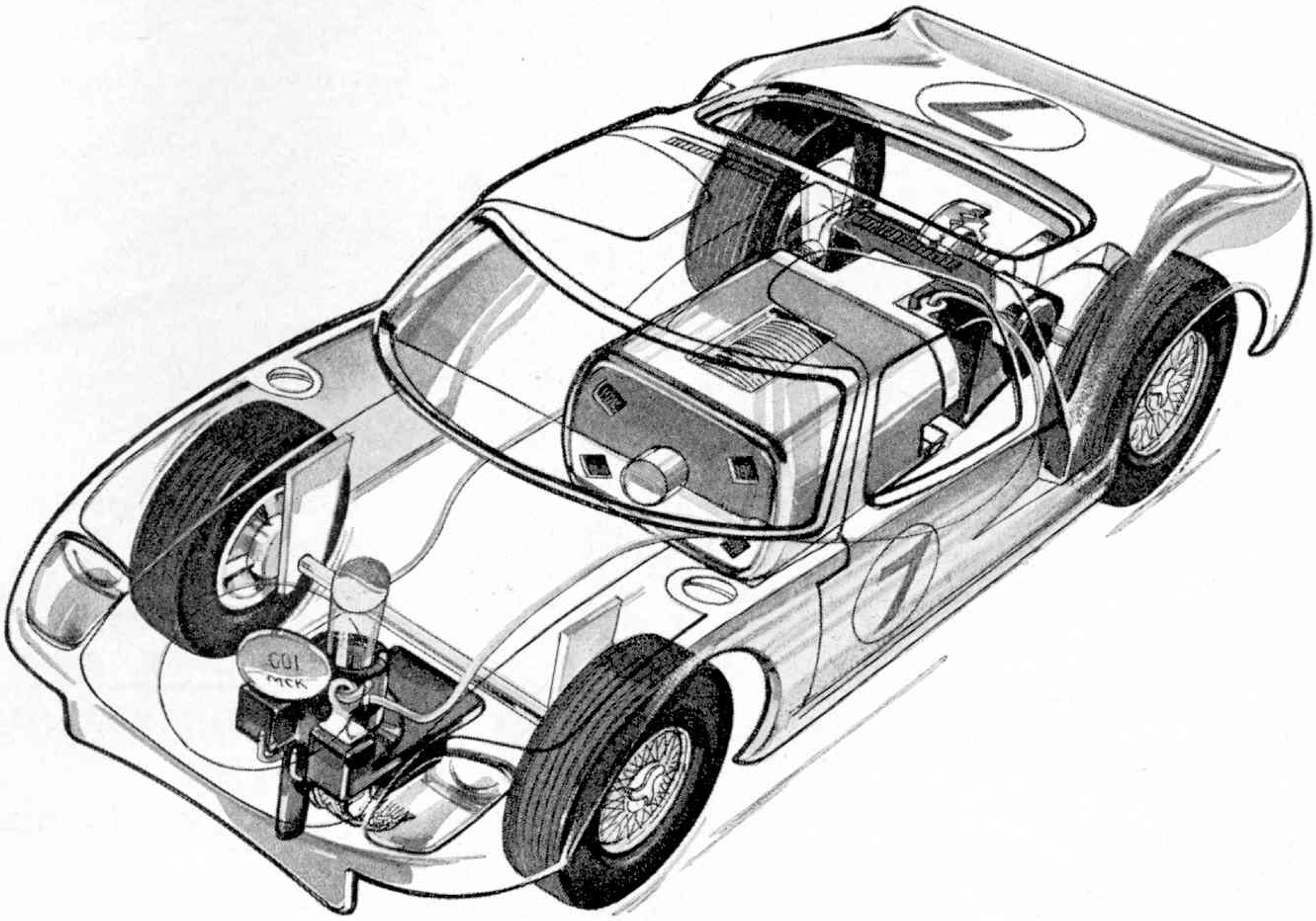

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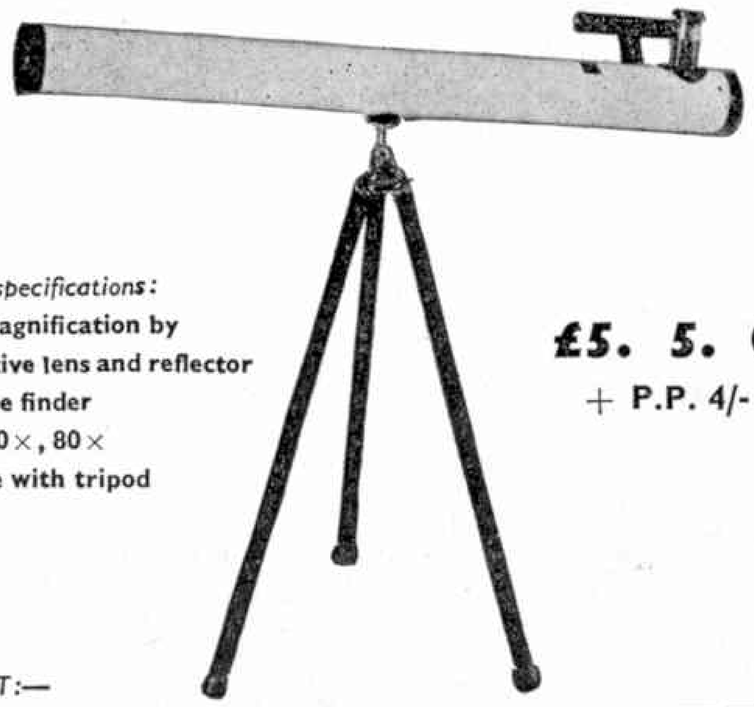

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LAST MONTH'S DINKY TOY WINNERS

BELOW is a list of fifty names of readers whose entries for last month's 'Silhouette' competition were the first correct answers to be selected by the Editor. If your name appears in this list, then write on a postcard to: *Silhouette Prize, Meccano Magazine, Thomas Skinner & Co. Ltd., St. Alphage House, Fore Street, London, E.C.2*, and claim your FREE Dinky Model Holden Sedan. If your name does not appear in this list, even though you entered for the competition, don't be disappointed—try again!

S. P. Allen, the Pryors, East Heath Road, London, N.W.3. *P. Armstrong*, Beechcroft Road, London, S.W.17. *C. Baker*, Cold Blow Crescent, Bexley, Kent. *K. Beaven*, Court Way, Acton, London, W.3. *J. J. Bennallack-Hart*, Sutton Valence, Kent. *S. M. Betts*, Beech Avenue, Radlett, Herts. *M. Bolam*, Pickhurst Rise, West Wickham, Kent. *K. Booker*, Hill Top Close, Loughton, Essex. *J. Bowyer*, Cherry Way, Upper Halliford Road, Shepperton, Middx. *S. Brenner*, Shephall View, Stevenage, Herts. *J. Clueit*, Norwood Road, Stretford, Manchester. *R. Cross*, Priory Road, Boston, Lincs. *D. Curson*, Heslop Road, Balham, London, S.W.12. *J. A. Elliott*, Lichfield Road, Copnor, Portsmouth, Hants. *D. Evans*, Borough Street, Kegworth, Nr. Derby. *J. Field*, Green Street, Upton Park, London, E.13. *P. Gardner*, Northon Mold, Flintshire, N. Wales. *N. Gray*, Overslade Lane, Rugby, Warwickshire. *P. W. Gribble*, Ruskin Road, Carshalton, Surrey. *G. Haffenden*, Withypitts, Turners Hill, Crawley, Sussex. *R. Harris*, Strathmore Road, Wimbledon, London, S.W.19. *C. Higgins*, Hampden Hill, Ware, Herts. *R. Hill*, Cotman Close, Great Barr, Birmingham 22A. *S. Hills*, Ham Green, Pill, Bristol. *R. Hobs*, Morningside Road, Edinburgh. *J. Hughes*, Burlington Road, Midsomer Norton, Nr. Bath, Somerset. *G. Hyde*, Denby Street, Bradford 8. *M. Knight*, Roundle Square Road, Bognor Regis, Sussex. *J. Lamb*, Yardley Wood Road, Birmingham 14. *L. Lander*, Wood Street, Wood End, Atherstone, Warwickshire. *P. Llewellyn*, Larkhall Rise, Claphall, London, S.W.4. *P. Marriott*, Westbourne Road, Blackheath, Birmingham. *J. K. Marsden*, Park Lane, Broxbourne, Herts. *A. Marston*, Church Close, Hayes End, Middx. *A. Matthews*, Shakespeare Road, Iford, Bournemouth, Hants. *G. K. Mills*, The Stockwell, Wymerswold, Nr. Loughborough, Leics. *D. Parsons*, Hall Lane, Upminster, Essex. *D. M. Prowse*, The Drive, Loughton, Essex. *S. Purver*, Wicor Mill Lane, Porchester, Fareham, Hants. *I. Scollick*, Wades Hill, London, N.21. *M. Sherborne*, Blackborough Road, Reigate, Surrey. *P. Smith*, Orchard Grove, Cowplain, Hants. *R. I. Smith*, Columbia Avenue, Sutton-in-Ashfield, Notts. *P. Snelling*, Turners Hill, Crawley, Sussex. *R. Todd Bradley*, Ashbourne, Derbys.

Overseas Winners of Competition 'O' Jaguar Mark 10

M. Fouad Awad, Messaha Street, Bulkely, Alexandria, Egypt, U.A.R. *J. Hatherell*, 38 Ave Lachine, Quebec, Canada. *L. Raffo*, Viale Lexert, Aosta, Italy. *R. Stuart*, Delongpre Avenue, Hollywood, California, U.S.A. *J. Versailles*, Rue Au Beurre, Ypres, Belgium.

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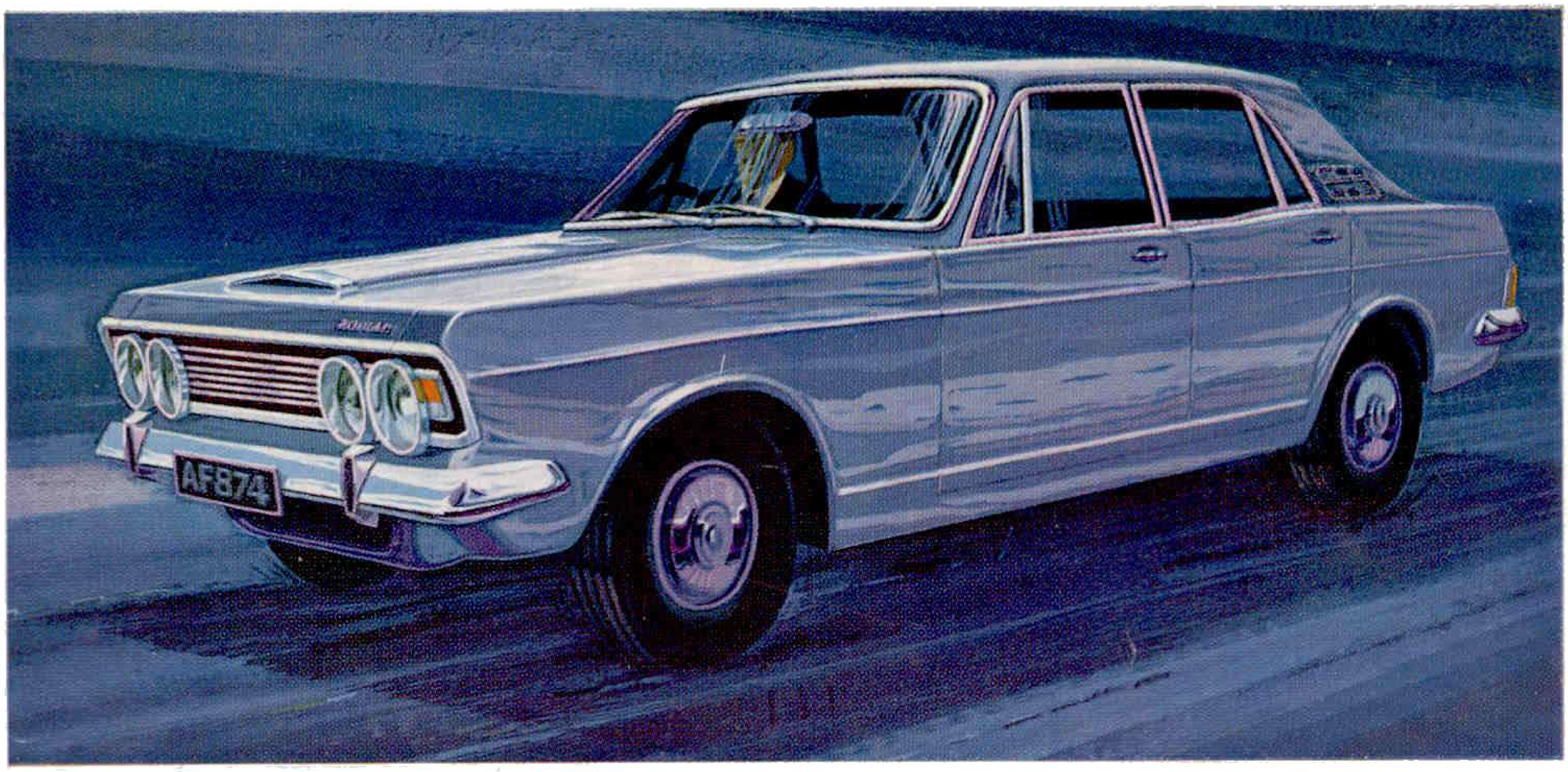

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